

Tambinia bambusanasp. nov., a New Bamboo-Feeding Species of Tambiniini (Hemiptera: Fulgoromorpha: Tropiduchidae) from China

Authors: Chang, Zhimin, and Chen, Xiangsheng

Source: Florida Entomologist, 95(4) : 971-978

Published By: Florida Entomological Society

URL: <https://doi.org/10.1653/024.095.0423>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

TAMBINIA BAMBUSANA SP. NOV., A NEW BAMBOO-FEEDING SPECIES OF TAMBINIINI (HEMIPTERA: FULGOROMORPHA: TROPIDUCHIDAE) FROM CHINA

ZHIMIN CHANG^{1,2} AND XIANGSHENG CHEN^{1,2*}

¹Institute of Entomology, Guizhou University, Guiyang, Guizhou, 550025 China

²The Provincial Key Laboratory for Agricultural Pest Management of Mountainous Regions, Guizhou University, Guiyang, Guizhou Province, 550025 China.

*Corresponding author; E-mail: chenxs3218@163.com

ABSTRACT

Tambinia bambusana **sp. nov.** (Hemiptera: Fulgoromorpha: Tropiduchidae: Tambiniini), a new species feeding on *Dendrocalamus latiflorus* Munro (Poaceae: Bambusoideae), is described and illustrated from Guizhou and Guangxi, China. This represents the first record of the members of genus *Tambinia* Stål feeding on bamboo. A key to all 25 species of *Tambinia* is given.

Key Words: bamboo-feeding planthoppers, Fulgoroidea, Oriental region, taxonomy

RESUMEN

Se describe e ilustra una nueva especie, *Tambinia bambusana* **sp. nov.** (Hemiptera: Fulgoromorpha: Tropiduchidae: Tambiniini) que se alimenta de *Dendrocalamus latiflorus* Munro (Poaceae: Bambusoideae) en Guizhou y Guangxi, China. Esta especie representa el primer registro de los miembros del género *Tambinia* Stål que se alimentan de bambú. Se provee una clave para las 25 especies conocidas de *Tambinia*.

Palabras Clave: machacas que se alimentan del bambú, Fulgoroidea, región oriental, taxonomía

The tropiduchid planthopper genus *Tambinia* (Tropiduchidae: Tambiniini) was established by Stål (1859) with 3 new species from Sri Lanka (type species: *T. languida* Stål, 1859). Since then, 21 species have been added to the genus, from Sri Lanka (5 species) (Distant 1906, 1916), China (4 species) (Matsumura 1914; Liang & Jiang 2003; Men et al. 2009; Wang & Liang 2011), India (4 species) (Distant 1906, 1916; Muir 1931), Malaysia (4 species) (Distant 1906; Fennah 1982; Wang & Liang 2011), Papua New Guinea (4 species) (Melichar 1914; Metcalf 1954; Wang & Liang 2011), Vietnam (3 species) (Liang & Jiang 2003; Wang & Liang 2011), Burma (2 species) (Distant 1906), Australia (2 species) (Kirkaldy 1906; Wang & Liang 2011), Micronesia (2 species) (Metcalf 1946; Fennah 1956), the Philippines (1 species) (Fennah 1970), Japan (1 species) (Matsumura 1914), Malacca (1 species) (Metcalf 1954), Singapore (1 species) (Metcalf 1954), Laos (1 species) (Liang & Jiang 2003) and Tanzania (1 species) (Wilson 1986).

The tropiduchid fauna of China remains inadequately studied. The 5 species recorded are: *T. bizonata* Matsumura, 1914 (Taiwan), *T. debilis* Stål, 1859 (Guangdong, Fujian, Jiangxi, Hunan, Zhejiang, Anhui, Henan, Hong Kong and Taiwan),

T. menglunensis Men & Qin, 2009 (Yunnan), *T. rubrolineata* Liang, 2003 (Hainan and Yunnan) and *T. similis* Liang, 2003 (Hainan and Yunnan). There is little biological information about the genus. *T. verticalis* Distant was found breeding on coconuts in Zanzibar, Tanzania (Wilson 1986). *T. theivora* Fennah was collected on tea in Malay Peninsula (Fennah 1982). *T. capitata* Distant was recorded feeding on African oil-palm (Wilson 1986). In China, *T. debilis* Stål was recorded attacking tea plant (Zhang et al. 2004).

During a study of species biodiversity of the bamboo-feeding planthoppers in China, several specimens belonging to an undescribed species of *Tambinia* were found on one native bamboo, *Dendrocalamus latiflorus* Munro (Poaceae: Bambusoideae). This represents the first record of the members of genus *Tambinia* Stål feeding on bamboo. The purpose of this paper is to describe this new species, *T. bambusana* **sp. nov.** and to provided a key to all species of *Tambinia*.

MATERIALS AND METHODS

Morphological terminology follows Wang et al. (2009) and Wang & Liang (2011). Dry specimens were used for the descriptions and illustrations.

External morphology was observed under a stereoscopic microscope and characters were measured with an ocular micrometer. Body length is measured from the apex of the head to the apex of the forewing in repose. The genital segments of the examined specimens were macerated in 10% KOH, washed in water and transferred to glycerine. Illustrations of the specimens were made with a Leica MZ 12.5 stereomicroscope. Photographs of the types were taken with a Leica D-lux 3 digital camera. The digital images were then imported into Adobe Photoshop 8.0 for labeling and plate composition. The type specimens are deposited in the Institute of Entomology, Guizhou University, Guiyang, China (IEGU), and the Natural History Museum, London (BMNH).

Descriptive Taxonomy

Genus *Tambinia* Stål, 1859

Tambinia Stål, 1859: 316; Distant 1906: 276; Bierman 1910: 26; Muir 1931: 303; Metcalf 1954: 100; Liang and Jiang 2003; Wang and Liang 2011.

Type species: *Tambinia languida* Stål by subsequent designation.

Diagnosis

Small-sized tropiduchids. Head with eyes narrowed than pronotum, distinctly produced in front of eyes and apically rounded, usually strongly dorsoventrally depressed and distinctly flattened in lateral view. Vertex tricarinate, disc of vertex (excluding median carina) depressed, posterior margin straight. Frons distinctly reclined caudad, somewhat flat and smooth, with or without median carina, rarely covered with sparsely microsetae. Clypeus triangular, relatively convex, with or without median carina,

lateral margins not carinate. Rostrum short, not reaching mesotrochanters. Antennae with scape very small, pedicel cylindrical, covered with long setulae, sensory plaques present on top surface of pedicel. Pronotum tricarinate, anterior margin straight and hind margin angulately excavate, with a single carina between eye and tegula. Mesonotum tricarinate. Hind tibiae each with 2 distinct lateral spines; spinal formula of hind leg (4-5)-(4-5)-2; metatarsal segment II short and small. Forewings with oblique nodal line, apical portion flexing ventrad at this line, basal portion somewhat sub-hyaline, with or without granulate, thicker than apical portion, costal cell without cross veins.

Male Genitalia. Pygofer symmetrical, dorsal margin deeply excavated to accommodate anal tube. Gonostylus elongate, bilaterally symmetrical, membranously fused with pygofer at base, with a conical, median process in ventral view, with a dorsally directed process arising from inner side near base and a laminate, inward directed, triangular process arising from inner side near middle. Perianthrium dorsally connected with ventrobasal margin of anal tube, membranously fused with pygofer at ventral side, tube-like, distinctly sclerotized, surrounding aedeagus subapically or mesially, and visible in lateral view. Aedeagus, asymmetrical, elongate and tubular, shaft of aedeagus slender and elongate, tubular, and sinuate in lateral view, subapically or mesially embraced in perianthrium, endosoma membranous, with or without spines (Wang & Liang 2011).

Distribution

China, India, Vietnam, Sri Lanka, Philippines, Malaysia, Japan, Burma, Malay States, Malacca, Singapore, Micronesia, Laos, Australia, Papua New Guinea, New Guinea, Tanzania.

KEY TO SPECIES OF GENUS *TAMBINIA* STÅL

(MODIFIED FROM WANG & LIANG 2011)

1. Vertex shorter in middle than the widest breadth, or about as long as broad 2
— Vertex distinctly longer in middle than the widest breadth. 12
2. Frons with carina obsolete 3
— Frons with carina distinct 4
3. Frons about as long as broad, forewings with two black elongate spots near bases of sutural margins, nodal line marked with several fuscous spots *T. atrosignata* Distant
— Frons distinctly longer than broad, forewings with two red elongate marks near bases of sutural margins, many orange or red spots marked from basal part to nodal line, nodal line suffused with one transverse orange to red band *T. macula* Liang
4. Forewing granulate 5

- Forewing non granulate 6
- 5. Forewing marked without transverse bands *T. debilis* Stål
- Forewing marked with two brown transverse bands across sub-basally, on nodal line and in clavus
. *bizonata* Matsumura
- 6. Forewing with nodal line near apex
- Forewing with nodal line near middle 9
- 7. Forewing with marks and stripes distinct 8
- Forewing with marks and stripes very pale, nearly absent *T. similis* Liang
- 8. Forewing with 11 apical cells, 4-5 subapical cells *T. rubrolineata* Liang
- Forewing with 9 apical cells, 3-4 subapical cells *T. theivora* Fennah
- 9. Body suffused with distinct spots and markings 10
- Body without spots and markings, median carinae of vertex and pronotum thickened and broad,
frons with basal part of median carina strongly broad and thickened, not reaching to fron-
topleural suture, obsolete on level of antennae *T. robustocarina* Liang
- 10. Body pale green, vertex without spot 11
- Body pale yellow, vertex, pronotum and mesonotum marked with reddish spots, forewing with
nodal line suffused with red stripes. *T. menglunensis* Men & Qin
- 11. Pronotum with posterior margin marked with reddish stripes, mesonotum with carinae reddish,
forewing with nodal line suffused with fuscous *T. rufoornata* Stål
- Pronotum without reddish stripes, mesonotum with carinae pale green, forewings with nodal line
and sutural margins suffused with grey. *T. bambusana* **sp. nov.**
- 12. Vertex medially 1.1-1.3 times as long as maximum breadth 13
- Vertex medially 1.4-1.8 times as long as maximum breadth 19
- 13. Body above suffused with marks of different colors 14
- Body above concolorous, without marks of different colors 17
- 14. Vertex with sublateral carinae basally between median carina and lateral margins 15
- Vertex without sublateral carinae between median carina and lateral margins. 16
- 15. Vertex with six red spots, pronotum and mesonotum without spots, forewing with two pairs of red
spots near bases of sutural margins and distad of level of union of claval veins respectively. .
. *T. sexmaculata* Liang
- Vertex with two short reddish stripes, pronotum with a pair of orange spots outside lateral carinae,
carinae on vertex and pronotum orange, mesonotum with a pair of orange spots beside lateral
carinae near posterior margin, forewing with many reddish spots marked from basal part to
nodal line *T. conus* Liang
- 16. Carinae on vertex, pronotum and mesonotum without pigmentation, mesonotum suffused with
ochraceous *T. languida* Stål
- Carinae on vertex, pronotum and mesonotum reddish, mesonotum suffused with dark brown . . .
. *T. zonata* Muir
- 17. Head not prominently narrowed anteriorly 18
- Head gradually narrowed to apex *T. capitata* Distant

18. Forewing with Cu1 forking distad of level of union of claval veins, with 12 apical cells, subapical cells less than 5 *T. guamensis* Metcalf
- Forewing with Cu1 forking basad of level of union of claval veins, with 14 apical cells, subapical cells more than 6 *T. pitho* Fennah
19. Body concolorous, without marks of different colors 20
- Body suffused with marks of different colors 21
20. Vertex medially 1.4 times as long as maximum breadth, pronotum without short carinae between median carina and lateral margin *T. inconspicua* Distant
- Vertex medially 1.7 times as long as maximum breadth, pronotum with a pair of short carinae basally between median carina and lateral margins. *T. sisypus* Fennah
21. Forewing with nodal line suffused with pigmentation 22
- Forewing with nodal line concolorous, without pigmentation. 23
22. Vertex and pronotum with orange marks, nodal line fuscous *T. verticalis* Distant
- Vertex, pronotum and mesonotum red, carinae green *T. fasciculosa* Melichar
23. Forewing suffused with marks 24
- Forewing without marks *T. exoleta* Melichar
24. Vertex and pronotum finely marked with red spots *T. rubromaculata* Distant
- Vertex marked with six red spots, pronotum with lateral carinae red *T. venusta* (Kirkaldy)

Tambinia bambusana **sp. nov.** (Figs. 1-19)

Material Examined

Holotype: ♂, Maolan National Nature Reserve (25°24'N, 107°52'E), Libo, Guizhou Province, China, on bamboo, 16-23 July 2011, Z.-M. Chang, Q.-Z. Song, J.-K. Long and W.-B. Zheng (IEGU); paratypes: 12♂♂, 7♀♀, same data as holotype (IEGU); 5♂♂, 8♀♀, Nandan (24°59'N, 107°32'E), Guangxi Province, China, on bamboo (*Dendrocalamus latiflorus* Munro), 4 August 2010, X.-S. Chen (IEGU), one male and female deposited in BMNH.

Etymology

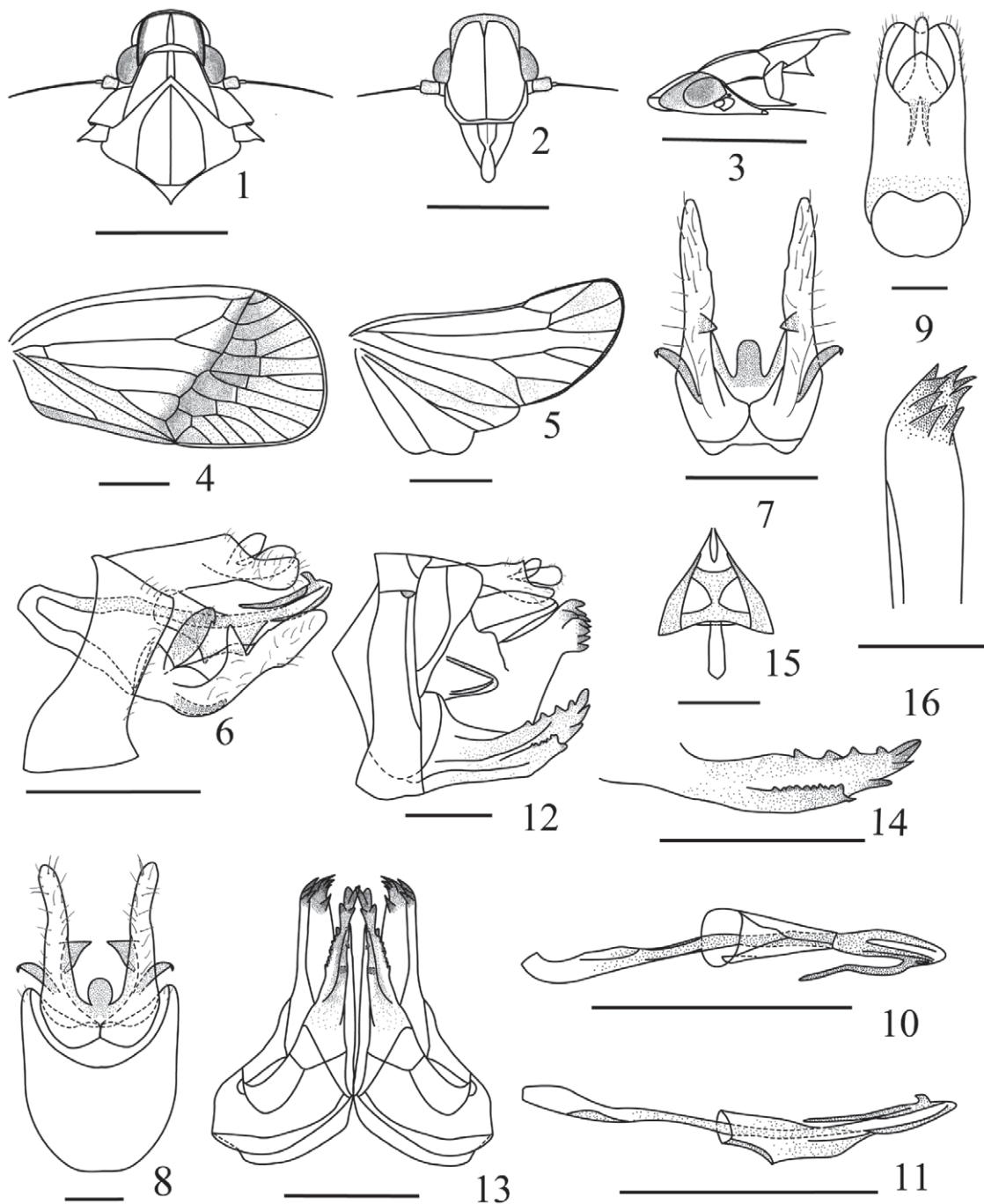
The new species is named after the host plant bamboo (Bambusoideae).

Description

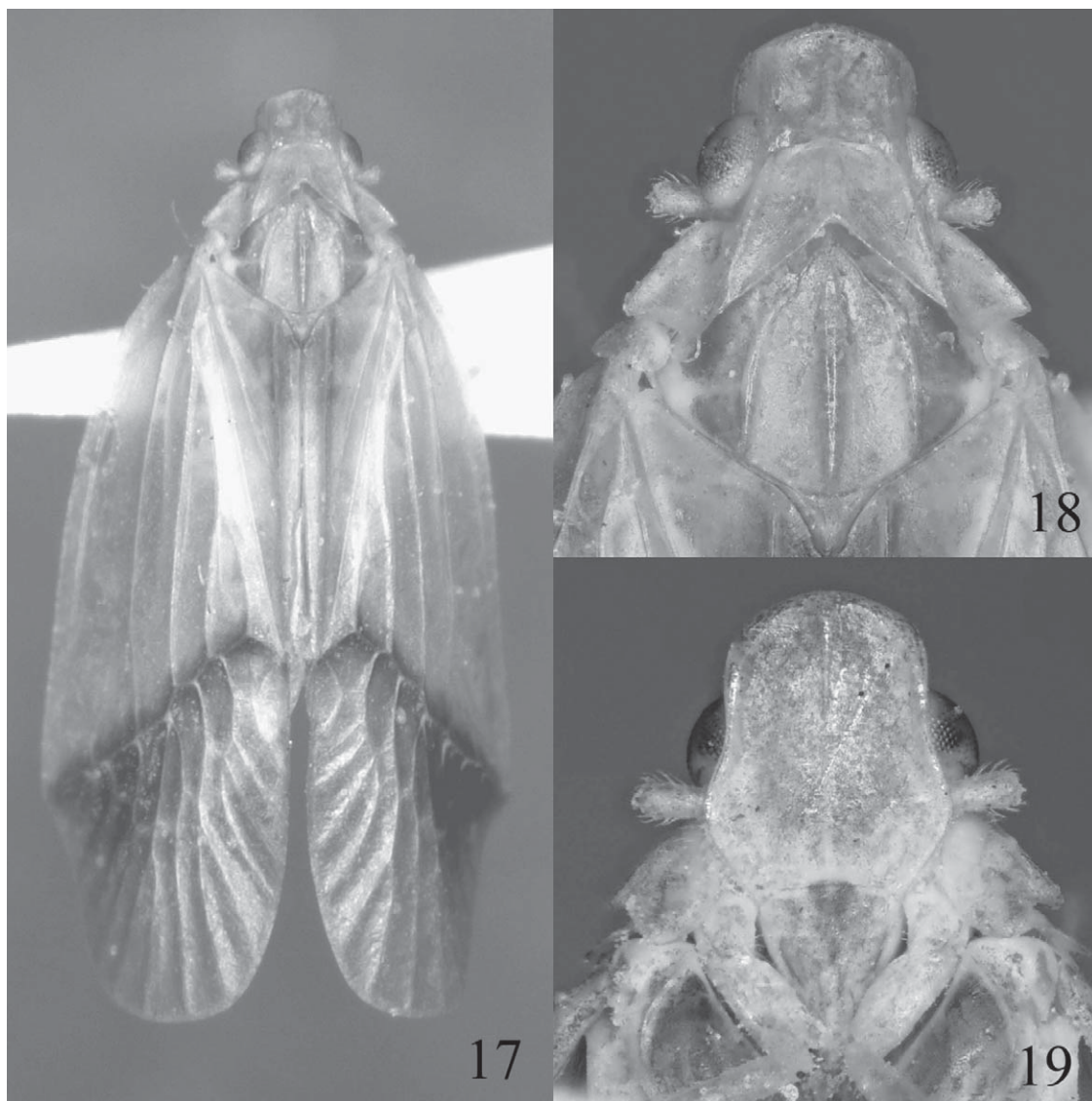
Body length (from apex of vertex to tip of forewing): male 5.7-6.5 mm ($N = 18$); female 6.0-6.8 mm ($N = 15$).

Coloration. General color (Figs. 17-19) pale green, eyes red brown to black. Forewings translucent with veins yellowish green, nodal line and sutural margins suffused with grey zones, formed a reverse Y-shaped, tips of spines on hind tibiae and tarsi black.

Head and Thorax. Head projecting before eyes approximately median length of eye, not strongly dorsoventrally depressed. Vertex distinctly shorter in middle than the widest breadth (1.0: 1.9), disc of vertex with one median carina, with a pair of short tender sublateral carinae basally between median carina and lateral margins; anterior margin slightly projected at an obtuse round, posterior margin nearly straight; lateral margins strongly ridged in dorsal view. Frons flat, disc slightly depressed, longer in middle than the widest breadth (1.6: 1.0), lateral margins of frons incurved below level of socket of antennae, with basal part of median carina broad then thickened. Clypeus triangular, with thin median carina. Pronotum distinctly shorter than mesonotum in midline (1.0: 3.8), carinae strongly ridged, lateral carinae diverging posteriorly, median carina distinct, reaching posterior margin. Pronotum and mesonotum together medially 5.4 times as long as median length of vertex. Hind tibiae each with 2 distinct lateral spines, spinal formula of hind leg 5-5-2. Forewing broad, 2.0 times as long as maximum breadth, without granulae, Sc+R forking about medially, Cu1 forking about at 2/5 basal, with about 15 apical cells and 6 subapical cells, claval veins uniting basad of middle of clavus.



Figs. 1-16. *Tambinia bambusana* sp. nov. 1. Head and thorax, dorsal view; 2. Head, ventral view; 3. Head and thorax, lateral view; 4. Forewing; 5. Hind wing; 6. Male genitalia, lateral view; 7. Gonostylus, dorsal view; 8. Pygofer and gonostylus, ventral view; 9. Anal segment, dorsal view; 10. Aedeagus and perianthium, dorsal view; 11. Aedeagus and perianthium, lateral view; 12. Female genitalia, lateral view; 13. Female genitalia, ventral view; 14. First valvula, lateral view; 15. Second valvula, ventral view; 16. Apex of third valvula. Scale bars = 0.2 mm (Figs. 8, 9, 15, and 16), 0.4 mm (Figs. 7, 12), 0.5 mm (Figs. 6, 10, 11, 13, and 14), 1.0 mm (Figs. 1-5).



Figs. 17-19. *Tambinia bambusana* sp. nov. 17. Dorsal habitus (♂); 18. Head and thorax, dorsal view; 19. Head and thorax, ventral view.

Male Genitalia. Pygofer irregular subquadrate in lateral view, anterior margin moderately concave, posterior margin concave on ventral 1/3. Anal tube relatively elongate, dorsal margin nearly straight, ventral margin bent ventrad in lateral view; lateral margins paralleling in dorsal view; anal styles relatively long, approaching apex of anal tube in dorsal view. Gonostylus elongate, expanded at apical 1/3 then narrowing to apex in dorsal view, with median triangular process distinct, with a hook-like process produced near the base; in ventral view bridge of gonostylus round at tip. Perianthrium tube-like, distinctly sclerotized, with a

short process at ventral base, surrounding aedeagus medially. Aedeagus with shaft sinuate, apical part expand with two process, which dorsal one distinctly shorter than the lateral one directed to the base.

Female Genitalia. Anal segment moderately elongate in lateral view. In lateral view first valvula of ovipositor sclerotized, narrowing at apical half, dorsal margin with 5 teeth, ventral margin with 3 teeth and several indistinct minute teeth submedially. Second valvulae triangular, converging apically. Third valvula membranous and large, then narrowing distally, apical part with 8 teeth.



Figs. 20-21. Host plant of *Tambinia bambusana* **sp. nov.** 20. View of the area where the specimens of *T. bambusana* were captured, in Nandan (Guangxi, China) with *Dendrocalamus latiflorus* Munro; 21. View of the plant, *D. latiflorus* Munro.

Host Plant

Bamboo (*Dendrocalamus latiflorus* Munro) (Figs. 20 and 21).

Distribution

Southern China (Guizhou and Guangxi Provs.).

Remarks

This new species is similar to *T. robustocarina* Wang & Liang, 2011 and *T. macula* Wang & Liang, 2011, but can be distinguished from those two species in forewings with a reverse V-shaped grey zones in dorsal view; aedeagus with shaft sinuate, apical part expand with one short process and one long, with bridge of gonostylus round at tip.

ACKNOWLEDGMENTS

We are grateful to Prof. Guang-Qian Gou (College of Life Sciences, Guizhou University, China) for identifying the host plant bamboo. This research was supported by the National Natural Science Foundation of China (No. 31060290, 31093430, 31160163), by China Post-doctoral Science Foundation (No. 2005037111), and by the International Science and Technology Cooperation Program of Guizhou (20107005).

REFERENCES CITED

- DISTANT, W. L. 1906. The Fauna of British India, Including Ceylon and Burma. Rhynchota 3 (Heteroptera, Homoptera), Taylor & Francis, London. pp. 175-491.
- DISTANT, W. L. 1916. The Fauna of British India, Including Ceylon and Burma. Rhynchota 6 (Homoptera: Appendix). Taylor & Francis, London. pp. 17-145.
- FENNAH, R. G. 1956. Homoptera: Fulgoroidea. Insects of Micronesia 6: 1-211.
- FENNAH, R. G. 1970. The Tropiduchidae Collected by the Noona Dan Expedition in the Philippines and Bismarck Archipelago (Insect, Homoptera, Fulgoroidea). Steenstrupia 1: 61-82.
- FENNAH, R. G. 1982. A tribal classification of the Tropiduchidae (Homoptera: Fulgoroidea), with the description of a new species on tea in Malaysia. Bull. Entomol. Res. 72: 631-643.
- KIRKALDY, G. W. 1906. Leafhoppers and their natural enemies. Bulletin Hawaiian Sugar Planters' Assoc., Div. Entomol. 1: 271-479.
- LIANG, A.-P., AND JIANG, G.-M. 2003. Two New Species of *Tambinia* Stål (Hemiptera, Tropiduchidae) from China, Laos and Vietnam, with Description of Eggs. J. Kansas Entomol. Soc. 76: 509-517.
- MATSUMURA, S. 1914. Beitrag zur Kenntnis der Fulgoriden Japans, Annale Historico-Naturales Musei Nationalis Hungarici 12: 261-305.
- MELICHAR, L. 1914. Monographie der Tropiduchinen (Homoptera). Verhandlungen des Naturforschenden Vereins in Brünn 53: 1-145.
- MEN, Q.-L., QIN, D.-Z., AND LIU, G.-L. 2009. A Taxonomic Study of the Genus *Tambinia* Stål (Hemiptera: Fulgoroidea: Tropiduchidae) from China. Entomotaxonomia 31(1): 6-8.
- METCALF, Z. P. 1946. Insects Guam II, Homoptera. Fulgoroidea and Jassoidea of Guam. Bull. Bernice P. Bishop Museum 189: 105-148.
- METCALF, Z. P. 1954. General Catalogue of the Hemiptera. Fasc. IV. Fulgoroidea. Part 11. (Tropiduchidae). North Carolina State College, Raleigh, NC, USA 1-167.
- MUIR, F. 1931. New and little-known Fulgoroidea in the British Museum (Homoptera). Ann. Mag. Nat. Hist. 7: 297-314.
- STÅL, C. 1859. Novae quaedam Fulgoriorum formae speciesque insigniores. Berliner Entomol. Zeitschrift 3: 313-327.
- WANG, R.-R., LIANG, A.-P., AND WEBB, M. D. 2009. A new Tropiduchidae planthopper genus and species from China with descriptions of in copula genital structures (Hemiptera: Fulgoromorpha). Systematic Entomol. 34: 434-442.
- WANG, R.-R., AND LIANG A.-P. 2011. Taxonomic review of the genus *Tambinia* Stål (Hemiptera, Fulgoromorpha, Tropiduchidae) with descriptions of four new species from the Pacific Region. ZooKeys 132: 13-31.
- WILSON, M. R. 1986. An Indian Tropiduchid planthopper *Tambinia verticalis* Distant (Hemiptera: Fulgoriorum) breeding on coconut in Zanzibar. Bull. Entomol. Res. 76: 385-388.
- ZHANG, H.-G., AND TAN, J.-C. 2004. Chinese Tea-pests and their Pollution Control. Anhui Science and Technology Press, Anhui. pp. 14-16.