Oriental Bamboo Planthoppers: Two New Species of The Genus Bambusiphaga (Hemiptera: Fulgoroidea: Delphacidae) from Hainan Island, China

Authors: Xiaohui Hou, and Xiangsheng Chen
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ABSTRACT

Two new species of the bamboo-feeding genus Bambusiphaga, B. hainanensis Hou and Chen sp. nov. and B. basifusca Hou and Chen sp. nov. (Hemiptera: Delphacidae), from Hainan Island, Hainan Province, southern China, are described and illustrated. Bambusiphaga hainanensis belongs to the citricolorata group and B. basifusca belongs to the fasica group. A key to the 22 known species of this genus in the world is provided.

Key Words: Hemiptera, Fulgoroidea, Delphacidae, Bambusiphaga, new species, China

RESUMEN

Se describen e ilustran dos especies nuevas del género Bambusiphaga que se alimentan de bambú, B. hainanensis Hou y Chen sp. nov. y B. basifusca Hou y Chen sp. nov. (Hemiptera: Delphacidae), encontradas en la Isla Hainan Island, Provincia de Hainan, en el sur de China. Bambusiphaga hainanensis pertenece al grupo citricolorata y B. basifusca pertenece al grupo fasica. Se provee una clave de las 22 especies conocidas de este género en el mundo.
croscope and were scanned with Canon CanoScan LiDE 200, and then were imported into Adobe Photoshop 8.0 for labeling and plate composition. The designation of spines refers to the numbers of apical spines of the hind tibiae and 1st and 2nd hind tarsomeres. The type specimens and examined specimens are deposited in the Insect Collection at the Institute of Entomology, Guizhou University, Guiyang, Guizhou Province, China (IEGU).

DESCRIPTIVE TAXONOMY
Bambusiphaga Hung and Ding


Type Species: Bambusiphaga nigripunctata Huang and Ding 1979, by original designation.

Description: Slender and elongate delphacid species, body length 2.8-5.2 mm (from apex of vertex to end of forewing). General color milky-yellow to yellowish-brown, often with brown or black markings.

Head, including eyes, narrower than pronotum. Vertex quadrate or rectangular, slightly longer or shorter medially than width at base, slightly narrower at apex than at base, lateral margins more or less diverging anteriorly, apical part slightly projecting in front of eyes, apical margin evenly rounded into frons, submedian carinae originating from near apical 1/3 of lateral carinae, uniting at apex of vertex, lateral carinae curved inward, Y-shaped carina distinct and fine.

Frons elongate, rectangular, longer at middle line than wide (2.0-2.7:1), median carina distinct and simple, lateral carinae parallel or subparallel. Postclypeus with incomplete median carina, lateral carinae absent. Rostrum reaching mesotrochanters, apical segment slightly longer than wide. Antennae cylindrical, basal segment slightly longer or equal to width, 2nd segment longer than 1st (more than 2.7:1), reaching or not reaching frontoclypeal suture. Pronotum about as long as vertex, lateral carinae straight, reaching or almost reaching hind margin. Mesonotum longer at middle line than vertex and pronotum together (about 1.3-2.0:1), median carina extending to tip of scutellum. Spinal formula of hind leg 5-6-4. Post-tibial spur without teeth along posterior margin, but with an apical tooth. Forewing much longer than abdomen, hyaline, cross vein depositions medially, apical margin acutely rounded.

Anal style small. Anal segment of male ring-like, ventral margin with or without a process. Pygofer with or without medioventral processes. Aedeagus with or without phallobase; phallus complex, tubular. Genital styles simple, with a process, or forked apically. Seventh abdominal sternite of female present or absent.

Host Plant: Bamboo (Bambusoideae). Specimens were collected on leaves of bamboo in several genera, Bambusa, Dendrocalamus, Sinocalamus, Neosinocalamus, and Phyllostachys (Huang et al. 1979; Ding & Hu 1982; Ding et al. 1986; Yang & Yang 1986; Chen and Li 2000; Chen et al. 2000; Chen & Liang 2007).

Distribution: Oriental region, with abundant species in China.

KEY TO SPECIES OF BAMBUSIPHAGA HUANG AND DING

1. Vertex dark brown or with blackish-brown markings ........................................... 2
   — Vertex without markings ................................................................................. 3
2. Vertex yellowish-brown, basal compartment with a black oval spot in middle part (Huang et al. 1979); anal segment of male without process, pygofer without medioventral process .......................... B. nigripunctata
   — Vertex dark brown, basal compartment of vertex without black oval spot; anal segment of male with a very long process which surpasses base of genital styles; pygofer with conjugated medioventral processes .......................... B. pianmaensis
3. Mesonotum with blackish-brown markings ....................................................... 4
   — Mesonotum lacking blackish-brown markings .............................................. 7
4. Pronotum with blackish-brown markings on lateral areas; tegmina with blackish-brown markings on basal 1/2 .................................................................................. 5
   — Pronotum and tegmina without above marking ........................................... 6
5. Basal 1/2 of tegmina black; pygofer without medioventral process; genital styles not forked at apex ........................................................................................................... B. fascia
   — Basal 1/3 of tegmina with black marking; pygofer with conjugated medioventral processes; genital styles with forked apex .................................................................................. B. maculata
6. Tegmina somewhat reddish-orange, costal margin blackish-brown; genital styles relatively broad and short
   --> B. nigromarginata
   - Tegmina somewhat yellowish-brown, costal margin yellowish-brown; genital styles relatively slender
   --> B. taiwanensis

7. Ventral margin of anal segment with a process ........................................... 8
   - Ventral margin of anal segment without a process .................................. 13

8. Pygofer with 1 or 3 medioventral processes .............................................. 9
   - Pygofer without a medioventral process.................................................. 10

9. Tegmina with a brown band along transverse vein, pygofer with 1 medioventral process .... B. bakeri
   - Tegmina dark brown at basal 1/2, pygofer with 3 medioventral processes ........ B. basifusca
     sp. nov.

10. Process of anal segment very long, reaching ventral margin of pygofer ..................... 11
    - Process of anal segment very short ...................................................... 12

11. Body length of male 3.5-3.6 mm; genital styles with a process at base (Ding et al. 1986) . B. jinghongensis
    - Body length of male 4.3 mm; genital styles without a process at base (Huang et al. 1979) . B. mirostylis

12. Apical 1/2 of pterygodes blackish-brown; hind margin of male pygofer with produced acute angle medially; genital styles slender; aedeagus without phallobase (Ding & Hu 1982) ....................... B. huangi
    - Pterygodes yellowish-brown; hind margin of male pygofer not produced into an angle medially; genital styles broad and short; aedeagus with developed phallobase ...................... B. wangmoensis

13. Ventral margin of pygofer with a spine .................................................... 14
    - Ventral margin of pygofer without a spine ......................................... 15

14. With reddish-orange stripes along median carina of vertex and of pronotum; aedeagus without a process .............................. B. luodianensis
    - Without reddish-orange stripe along median carina of vertex or of pronotum; aedeagus with a contrary process ...................... B. singaporensis

15. Base of genital styles with a finger-like process .......................................... 16
    - Base of genital styles without a finger-like process ................................ 17

16. Near apex of genital styles with a finger-like process .................................. B. maolanensis
    - Near apex of genital styles with a lobation-like process ......................... B. hainanensis
      sp. nov.

17. Apex of genital styles forked (Asche 1983) ................................................ 18
    - Apex of genital styles not forked ....................................................... 20

18. Frons longer at middle line than wide at widest part, about 2.0: 1; baso-caudal portion of genital styles in profile produced into a right angle, granulate .................................. B. membranacea
    - Frons longer at middle line than wide at widest part, about 2.5: 1; baso-caudal portion of genital styles in profile not produced into a right angle (Asche 1983) ....................... 19

19. Median portion of genital styles granulate ................................................. B. furca
    - Median portion of genital styles not granulate (Asche 1983) .................... B. lynchi

20. Ventral margin of anal segment incised medially; genital styles short, lamellate ........ B. lacticolorata
    - Ventral margin of anal segment not incised medially; genital styles slender .... 21

21. Apex of vertex obviously broadened, frons widest at base; apex of genital styles without small tooth; aedeagus short, stout (Huang et al. 1979) ...................... B. similis
    - Apex of vertex not broadened, frons widest at apex; apex of genital styles with several small teeth; aedeagus relatively long ......................... B. citricolorata
Bambusiphaga hainanensis Hou and Chen

Description. Length of body 1.5-1.8mm (male), 1.9-2.1mm (female); including forewing 2.9-3.1mm (male), 3.4-3.5mm (female).

Coloration. General coloration light yellow or reddish-orange. Forewings color lighter than body, veins same to body, with a small brown mark along cross vein near apex of clavus. Ocelli, eyes dark brown. Abdomen color darker than other area, pygofer yellowish white, anal style dark brown.

Head and Thorax. Structural features as in generic descriptions. Vertex quadrate, length than wider at base about 1.1:1, broader at apex than at base (1:1.3), apical margin arch, carinae distinct, submedian carinae uniting at apex. Frons oblong, longer in middle line than wide at widest part about 2.4:1, slightly narrower at apex than at base, median carina simple. Clypeus developed, postclypeus wider at base than frons at apex obvi-
ously, median carina feeble. Antennae with first segment long equal to wide, second segment 2.7 times as long as first, 2 segments together reaching to frontoclyeal suture. Pronotum as long as vertex, lateral carinae attaining hind margin. Mesonotum about 1.3 times the length of vertex and pronotum together, median carina attaining the end of scutellum.

Male Genitalia. Anal segment of male ring-like, no process. Pygofer in profile much longer ventrally than dorsally, in posterior view opening longer than wide, no process at ventral margin. Aedeagus slender, very long, tubular, several spines at dorsal and ventral margin of apical half, blunt end with some small spines at apex. Genital styles long, S-shaped, apical part turning outward, tapering to apex, near apex and near base respectively with 1 lobe-like process and 1 spinous process.


Host Plant. Bamboo.

Etymology. This new species is named after the type locality, Hainan Province, China.

Distribution. Southern China (Hainan: Changjiang, Wuzhishan and Lingshui).

Remarks. Based on the morphological characters and male genitalia, this species should belong to the citricolorata group. This species resembles B. maolanensis, but differs in the following: genital styles near apex with 1 lobe-like process (with 1 finger-like process in the latter); aedeagus straight, with several teeth at dorsal and ventral margin of apical half (in the latter, aedeagus arched in middle, with 4 teeth surrounding gonopore). It is distinguished from B. citricolorata by aedeagus slender; with several teeth at apical half; and some small spines at apex (in B. citricolorata, aedeagus stout, with a node and several short gear-like processes at apex); genital styles tapering to apex, with lobe-like process near apex (narrowing to apex, with small teeth at apex in B. citricolorata).

Bambusiphaga basifusca Hou and Chen sp. nov. (Figs. 11-21)

Description. Length of body 1.5-1.6 mm (male), 1.9-2.0 mm (female); including forewing 2.8-2.9 mm (male), 3.2-3.5 mm (female).

Coloration. Generally color yellowish white with dark brown markings. Basal half of vertex, margins and area between lateral carina of pronotum (except oblong area dark brown markings), area of inner omia and escutcheon dirty yellowish white. Apex half of vertex light yellowish brown. Areas of outer lateral carinae of pronotum, mesonotum and outer area of omia dark brown to blackish brown. Base and apical 1/3 of fron and area of inner half of genae yellowish brown, fron medial mostly, area of outer half of genae and clypeus dark brown. First segment of antennae brown, 2nd yellowish brown. Ocelli and eye reddish brown to brown. Basal 1/2 of forewing black. Thorax yellowish brown to dark brown. Femora of fore legs and median legs dark brown, tibiae and digitus of fore legs and median legs and femora of hind legs yellowish brown, tibiae and tarsi of hind legs yellowish white. Abdomen dark brown, except yellowish brown posterior margin of each segment. Pygofer and anal segment dark brown.

Head and Thorax. Structural features as in generic descriptions. Vertex quadrate, length than wider at base about 1:1.1, narrower at apex than at base (1:1.6), apical margin arch, carinae distinct, submedian carinae uniting at apex. Frons oblong, longer in middle line than wide at widest part about 2.5:1, broader at apex than at base, median carina simple. Clypeus developed, post-clypeus as wide at base as frons at apex, median carina distinct. Antennae with first segment long equal to wide, second segment 2.7 times as long as first, both segments together not reaching to frontoclyeal suture. Pronotum as long as vertex, lateral carinae attaining hind margin. Mesonotum about 1.3 times the length of vertex and pronotum together, median carina attaining the end of scutellum.

Male Genitalia. Anal segment of male ring-like, right lateroapical angle strongly produced into a long and slender process, surpassing ventral margin of pygofer, slightly arched in lateral view. Dorsal margin of pygofer obviously shorter in profile than ventral margin. Opening of pygofer longer than wide in posterior view, with 3 small lobe-shape processes on ventral margin mediadly. Aedeagus slender; with simple phallobase. Phallobase small, in profile broad at base, thin and curved at apex. Phallosus slender, long, tubular, curved medially, blunt end. Genital styles moderate long, broad at base, apical part turning inward, tapering apically.


Host plant. Bamboo.

Etymology. This new species is named after the distinctive characters by basal half of forewing black, which can be distinguished from the other species.
Distribution. Southern China (Hainan: Ledong).

Remarks. Based on the morphological characters and male genitalia, this species should belong to the fasica group. This species resembles B. fascia, but differs in the following: forewing of male and female with basal half black (in the latter, forewing of female only with a dark brown transverse stripe medially); median area of frons dark brown (frons yellowish white in the latter); pygofer with 3 small lobe-shaped medioventral processes (absent in the latter); anal segment with a right lateroapical angle process (with a left lateroapical angle process in the latter); aedeagus with simple phallobase (absent in the latter).

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