

## **Revision of the Bamboo Delphacid Genus *Belocera* (Hemiptera: Fulgoroidea: Delphacidae)**

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Source: Florida Entomologist, 90(4) : 674-682

Published By: Florida Entomological Society

URL: [https://doi.org/10.1653/0015-4040\(2007\)90\[674:ROTBGD\]2.0.CO;2](https://doi.org/10.1653/0015-4040(2007)90[674:ROTBGD]2.0.CO;2)

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## REVISION OF THE BAMBOO DELPHACID GENUS *BELOCERA* (HEMIPTERA: FULGOROIDEA: DELPHACIDAE)

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### ABSTRACT

Planthoppers in the genus *Belocera* Muir, 1913 (Hemiptera: Fulgoroidea: Delphacidae: Delphacinae: Tropidocephalini) feed exclusively on bamboo (Poaceae: Bambusoideae). Three species, *B. sinensis* Muir (Macao, Taiwan, Guizhou, Hainan, China), *B. nigrinotalis* Ding and Yang (Yunnan, China), *B. fuscifrons* Chen (Guizhou, China), and 2 new species, *B. lanpingensis* Chen and Yang **sp. nov.** (Yunnan, China), *B. ampelocalama* Chen and Tsai **sp. nov.** (Guizhou, China) are described in this manuscript. One new synonymy reported, *B. huangbiana* Kuoh, 1980 is a junior synonym of *B. sinensis* Muir, 1913. The male of *B. fuscifrons* is reported and described for the first time. The generic characteristics are redefined. The main morphological features, male genitalia of 5 species and female genitalia of 3 species are described or redescribed and illustrated (excluding *B. nigrinotalis*). A key for identifying the species of the genus of *Belocera* is provided.

Key Words: Hemiptera, Fulgoroidea, Delphacidae, *Belocera*, new species, bamboo pest

### RESUMEN

Los delfácidos del género *Belocera* Muir, 1913 (Hemiptera: Fulgoroidea: Delphacidae: Delphacinae: Tropidocephalini) se alimentan exclusivamente sobre bambú (Poaceae: Bambusoideae). Tres especies, *B. sinensis* Muir (Macao, Taiwan, Guizhou, Hainan, China), *B. nigrinotalis* Ding y Yang (Yunnan, China), *B. fuscifrons* Chen (Guizhou, China) y dos nuevas especies, *B. lanpingensis* Chen y Yang **sp. nov.** (Yunnan, China), *B. ampelocalama* Chen y Tsai **sp. nov.** (Guizhou, China) son descritas en este trabajo. Se informa de una nueva sinonimia, *B. huangbiana* Kuoh, 1980 es un sinónimo "junior" de *B. sinensis* Muir, 1913. Se reporta y describe el macho de *B. fuscifrons* por la primera vez. Las características del género son redefinidas. Las características morfológicas principales, la genitalia de los machos de las 5 especies y la genitalia de las hembras de las 3 especies están descritas o redescribas e ilustradas (excluyendo *B. nigrinotalis*). Se incluye una clave de identificación para las especies del género *Belocera*.

The delphacid genus *Belocera* (Hemiptera: Fulgoroidea: Delphacidae) was established by Muir (1913) based on his type species *B. sinensis* from Macao, China. It belongs to the tribe Tropidocephalini of the subfamily Delphacinae and is easily separated from other members of this tribe by the frons, which is widest in the basal 1/3 (Figs. 2, 13, 24, 32), by the antennae with the scape forked at its apex, sagittate and slightly flattened; and by the forewing which bear a fuscous median longitudinal stripe and have a light yellowish white costal area (Figs. 3-5, 14-15, 25, 33). This genus is only known to occur in southern China. To date, 5 species have been described: *B. sinensis* Muir, 1913 (Macao; Taiwan: Taipei; Guizhou: Ludian, Wangmo), *B. huangbiana* Kuoh, 1980 (Hainan: Nada), *B. nigrinotalis* Ding & Yang,

1986 (Yunnan: Jinghong, Menghai), *B. zhejiangensis* Zhu, 1988 (Zhejiang: Hangzhou; Anhui: Langyashan, as transferred to the genus *Neobelocera* by Ding and Hu in 1991) and *B. fuscifrons* Chen, 2002 (Guizhou: Libo).

Species of the genus *Belocera* feed exclusively on bamboo (Poaceae: Bambusoideae) (Ding et al. 1986; Yang & Yang 1986; Yang et al. 1999; Chen 2002; Chen 2003b). Specimens have been collected on the leaves of several genera of bamboo including *Bambusa* (Yang & Yang 1986; Chen 2002; this paper), *Dendrocalamus* (Chen 2002) *Neosinocalamus*, *Phyllostachys*, and *Ampelocalamus* (this paper).

In this paper we revise the genus *Belocera*. One new synonymy reported is *B. huangbiana* Kuoh, 1980, a junior synonym of *B. sinensis* Muir, 1913. *Belocera lanpingensis* Chen and Yang, and *B. am-*

*pelocalama* Chen and Tsai, collected, respectively, from Lanping County, Yunnan Province, and Dashahe Nature Reserve, Daozhen County, Guizhou Province, are described as new to science. The male of *B. fuscifrons* Chen, collected from Fuqian County of Guizhou Province, is reported and described for the first time. The generic characteristics are redefined. The salient morphological features, male genitalia of 5 species and female genitalia of 3 species are described or redescribed and illustrated (excluding *B. nigrinotalis*). A key for identifying the species is provided.

#### MATERIALS AND METHODS

The methods and morphological terminology used in this study follow that of Ding et al. (1986), Yang & Yang (1986) and Chen (2002). The type specimens and materials examined are deposited in the Institute of Entomology, Guizhou University, Guiyang, Guizhou Province, P.R. China.

#### DESCRIPTIVE TAXONOMY

*Belocera* Muir 1913  
(Figs. 1-40)

*Belocera* Muir, 1913: 239. Type species: *B. sinensis* Muir, 1913, by original designation.

*Belocera* Muir: Kuoh et al., 1983, Econ. Ins. Fauna China 27: 43.

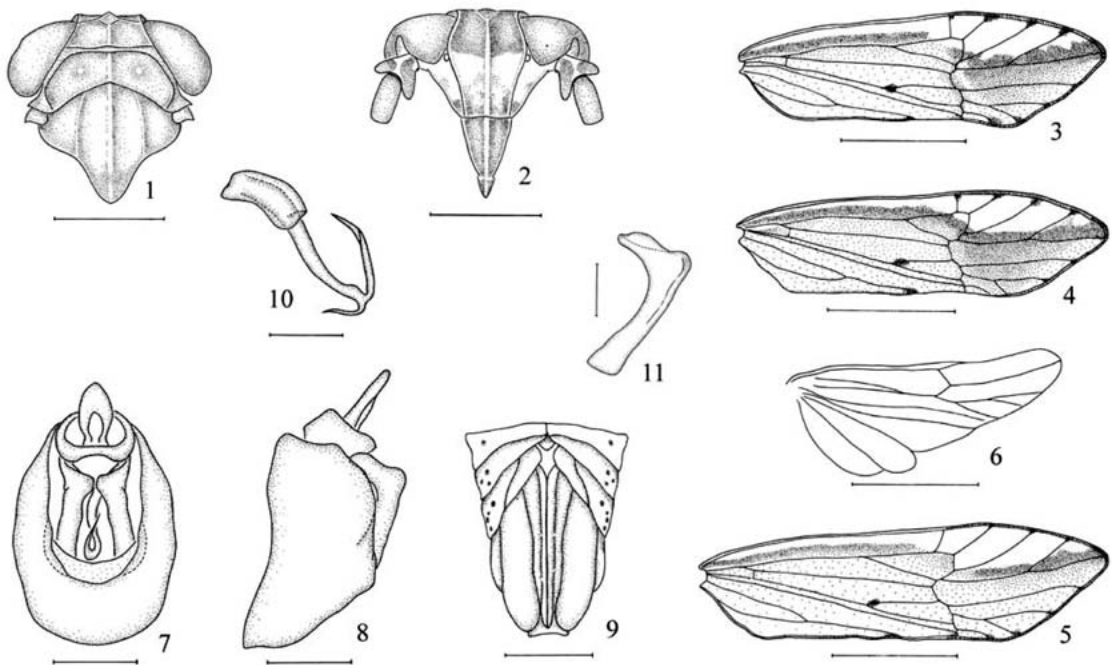
*Belocera* Muir: Yang & Yang, 1986, Taiwan Mus. Spec. Publ., 6: 42.

**Diagnosis.** The genus is readily separated from other Oriental genera of the tribe Tropidocephalini, subfamily Delphacinae, by the frons widest at basal 1/3, by the antennae with the scape forked at its apex, sagittate, by the forewings often with a fuscous central longitudinal fascia, costal area light yellow or yellowish white, and by the aedeagus with complex phallobase, phallus with long spinous processes at apex.

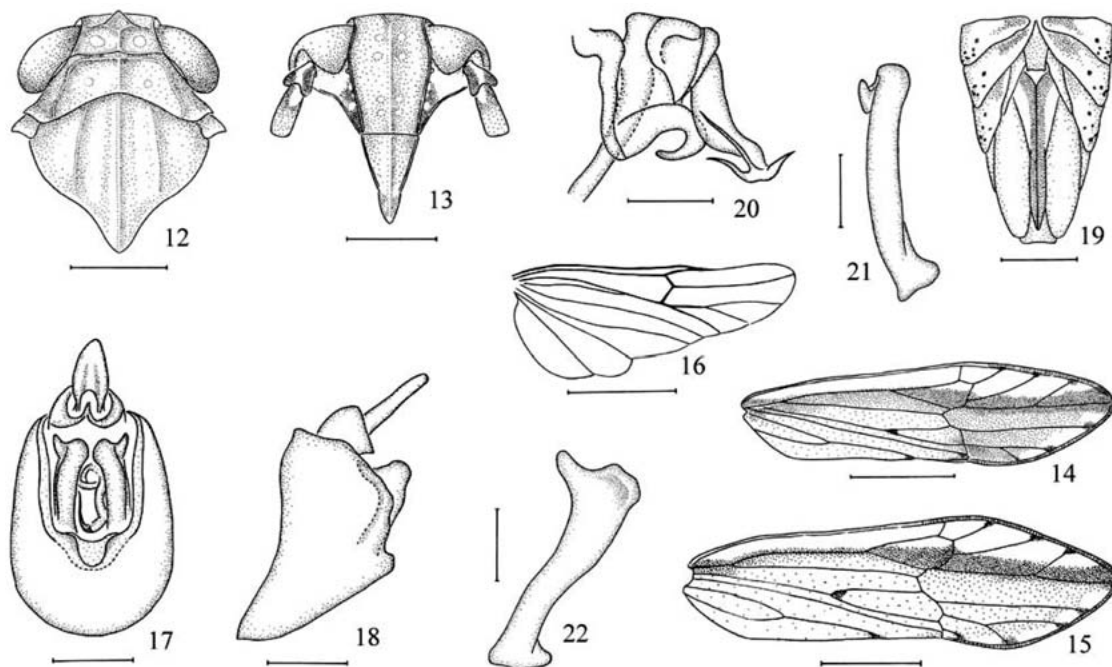
**Description.** The distinguishing characteristics outlined by Muir (1913), Kuoh et al. (1983) and Yang & Yang (1986), are modified as follow:

**Coloration.** General coloration yellowish brown to brown. The scape of antennae with two oblique bands brown to dark brown. Forewings often with a fuscous central longitudinal fascia, costal area light yellowish white (Figs. 3-5, 14-15, 25, 33).

**Head and Thorax.** Head, including eyes (Figs. 1, 12, 23, 31), wider than pronotum (1.10-1.26:1.00). Vertex wider at base than long submedially about 2.15-2.75:1.00, apical margin transversely broadened and only slightly produced medially. Y-shaped carina distinct, submedian carinae uniting at apex, apical margin evenly rounding onto



Figs. 1-11. *Belocera sinensis* Muir. 1. head and thorax, dorsal view; 2. frons and clypeus; 3. forewing (♂ Guizhou: Libo: Maolan); 4. forewing (♂ Guizhou: Luodian: Bamao); 5. forewing (♀ Guizhou: Luodian: Bamao); 6. hindwing (♂ Guizhou: Luodian: Bamao); 7. male genitalia, caudal view; 8. male genitalia, lateral view; 9. female genitalia, ventral view; 10. aedeagus, left side; 11. left genital style, lateral view. Scale bars: = 0.5 mm (Figs. 1-2, 9); 1 mm (Figs. 3-6); 0.2 mm (Figs. 7-8); 0.1 mm (Figs. 10-11).



Figs. 12-22. *Belocera fuscifrons* Chen. 12. head and thorax, dorsal view; 13. frons and clypeus; 14. forewing ( $\delta$  Guizhou: Fuquqn: Huangsi); 15. forewing (holotype  $\delta$ , Guizhou: Libo: Maolan); 16. hindwing ( $\delta$  Guizhou: Fuquqn: Huangsi); 17. male genitalia, caudal view; 18. male genitalia, lateral view; 19. female genitalia, ventral view; 20. aedeagus, left side; 21. left genital style, caudal view; 22. left genital style, lateral view. Scale bars: = 0.5 mm (Figs. 12-13, 19); 1 mm (Figs. 14-16); 0.2 mm (Figs. 17-18); 0.1 mm (Figs. 20-22).

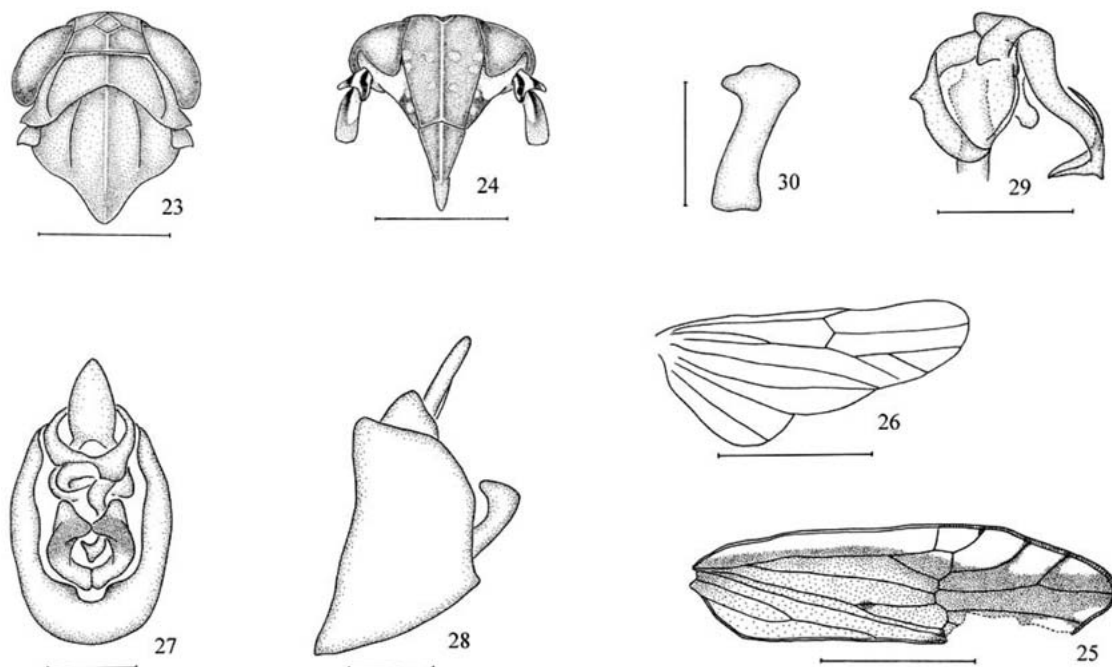
frons. Frons (Figs. 2, 13, 24, 32) in median line longer than wide at widest part about 1.23-1.35:1.00, widest above level of ocelli, lateral carinae roundly angulate above level of ocelli, then converging apically, median carina forked at base. Eyes strongly emarginate on lower margin. Postclypeus wider at base than frons at apex. Rostum surpassing mesotrochanters. Antennae surpassing frontoclypeal suture with scape sagittate, slightly flattened, in middle line shorter than width at apex (0.54-0.81:1.00), pedicel cylindrical, in middle line longer than scape about 1.92-2.80:1.00. Pronotum (Figs. 1, 12, 23, 31) shorter than vertex medially (0.71-0.94:1.00), posterior margin concave medially, with lateral carinae extending from near the posterolateral angle of the vertex to the posterior margin of the pronotum, running as anterolateral margin, curving inward and reaching hind margin, lateral discs concave. Mesonotum longer in middle line than vertex and pronotum combined (1.94-2.43:1.00), median carina reaching the end of scutellum. Forewings narrow and elongate long, longer in middle line than wide at widest part about 3.09-3.56:1.00, broadly acute at apex with a series of nearly connected transverse cross veins present at the posterior 1/3. Hindwings (Figs. 6, 16, 26, 34) with veins M and  $Cu_1$  fused for about half their length, M+ $Cu_{1a}$  and

$Cu_{1b}$  with a common stalk. Spinal formula of hind leg 5-6-4, post-tibial spur with an apical tooth.

**Male Genitalia.** Anal segment of male (Figs. 7, 17, 27, 35) small, ring-like, ventral margin and more or less concave, without processes or with a stout, very short process. Pygofer in lateral view (Figs. 8, 18, 28, 36) with ventral margin longer than dorsal margin, posterior margin convex, in caudal view (Figs. 7, 17, 27, 35) with opening longer than wide, ventral margin concave or with medioventral process. Genital styles parallel, flattened, in profile (Figs. 11, 22, 30, 40) nearly "7-shaped", simple, wider at apex than at base, apical portion angulate cephalad. Aedeagus (Figs. 10, 20, 29, 39) with phallobase, phallobase often developed and complex, twisted and covered on basal aspect of phallus. Phallus tubular, moderately long, protruding processes of various lengths from apex. Supporting plate not recognizable. Diaphragm membranous.

**Female Genitalia.** First valvifers present, second valvifers long and large. Ovipositor not overpassing the pygofer. Gonangulum (Figs. 9, 19, 38) distinct, with apex acute, blunt or truncate.

**Host Plant.** *Bambusa multiplex* (Lour.) Raeschel (Yang & Yang 1986), *B. emeiensis* Chia and Fung, *Dendrocalamus tsiangii* (McClure) (Chen 2002), *B. sinospinosa* McClure, *Neosinocalamus*



Figs. 23-30. *Belocera lanpingensis* Chen and Yang **sp. nov.** 23. head and thorax, dorsal view; 24. frons and clypeus; 25. forewing (♂); 26. hindwing (♂); 27. male genitalia, caudal view; 28. male genitalia, lateral view; 29. aedeagus, left side; 30. left genital style, lateral view. Scale bars: = 0.5 mm (Figs. 23-24); 1 mm (Figs. 25-26); 0.2 mm (Figs. 27-30).

*affinis* (Rendle) Keng f., *Ampelocalamus scandons* and *Phyllostachys* sp.

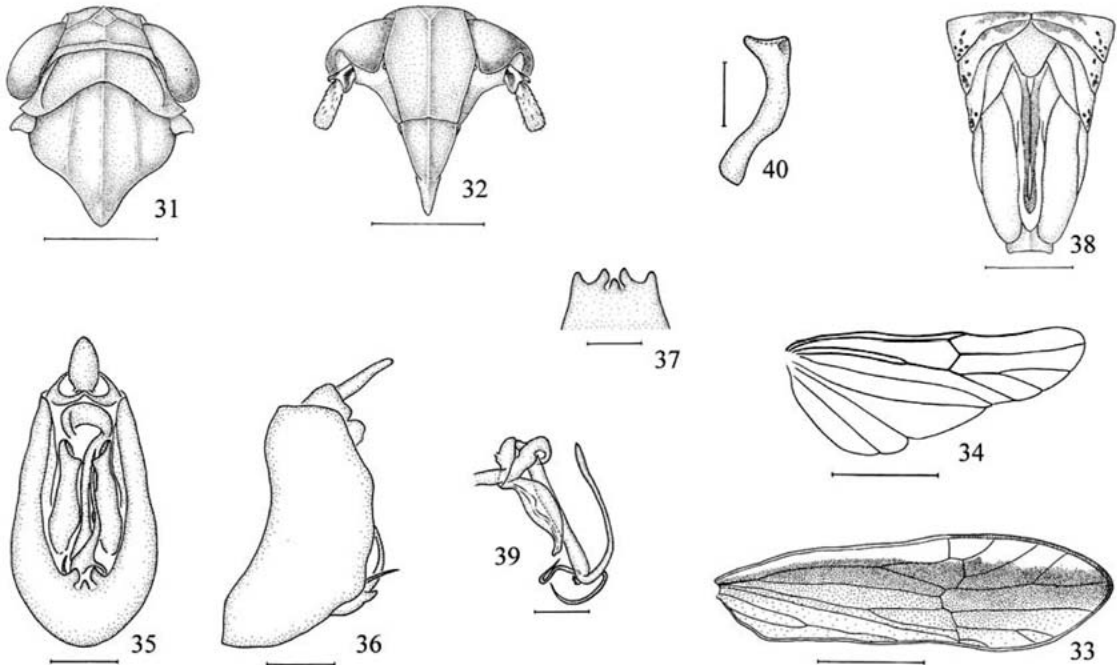
**Distribution.** Oriental Region (southern China).

**Discussion.** This genus is closely related to *Neobelocera* Ding and Yang, 1986 (Chen & Liang 2005), which also feeds on bamboo, but differs in the following: the latter with the antennae markedly flattened, first segment subsagittate, a longi-

tudinal carina down middle, with the apex unequally bifurcate, the inner apical angle much longer than outer apical angle, the postclypeus in profile, apical part of median carina bend at rounded, not angled, the rostrum very short, only reaching mesotrochanters, and the forewing often with snatchy blackish brown markings, in dark portion veins bear white spots.

#### KEY TO SPECIES OF *BELOCERA* MUIR

1. Frons with apical part bright yellow. . . . . 2  
—Frons yellowish brown or brown, coloration even from base to apex, or with pairs of small light spots (Figs. 13, 24). . . . . 3
2. Dorsum of body fuscous or blackish brown (Ding & Yang 1986: Fig. 1); furcation of Cu vein of forewings without dark spot (Ding & Yang 1986: Fig. 7); male pygofer with ventral margin sharply concave, V-like (Ding & Yang: Fig. 3); genital styles with apices forked (Ding & Yang 1986: Figs. 4-5); phallobase complex, with developed process (Ding & Yang 1986: Fig. 6) . . . . . *B. nigrinotalis*  
—Dorsum of body light yellowish brown; furcation of Cu vein of forewings with a dark spot (Figs. 3-5); male pygofer with ventral margin evenly concave (Fig. 7); genital styles with apices spoon-shaped (Fig. 11); phallobase simple, semicylindrical covered on dorsal aspect of phallus (Fig. 10) . . . . . *B. sinensis*
3. Frons evenly brown, without small light spot (Figs. 32); forewings without blackish brown spot (Fig. 33); male pygofer with 3 medioventral processes on ventral margin (Figs. 35, 37) . . . . . *B. ampelocalamus*  
—Frons brown to dark brown, with pairs of small light spots (Figs. 13, 24); forewings with a dark brown spot on furcation of Cu vein and with a small dark brown spot at the end of each longitudinal vein (Figs. 14, 15, 25); without medioventral processes (Figs. 17, 27) . . . . . 4



Figs. 31-40. *Belocera ampelocalamus* Chen and Tsai **sp. nov.** 31. head and thorax, dorsal view; 32. frons and clypeus; 33. forewing (♂); 34. hindwing (♂); 35. male genitalia, caudal view; 36. male genitalia, lateral view; 37. pygofer, ventral view; 38. female genitalia, ventral view; 39. aedeagus, left side; 40. left genital style, lateral view. Scale bars: = 0.5 mm (Figs. 31-32, 38); 1 mm (Figs. 33-34); 0.2 mm (Figs. 35-37, 39-40).

4. Body larger (body length of male including forewing 4.40-4.45mm); male anal segment with ventral margin incised medially, without process (Fig. 17); genital styles relatively longer (Figs. 21, 22); phallus with 3 long, slender spinous processes at apex (Fig. 20) . . . . . *B. fuscifrons*  
 —Body smaller (body length of male including forewing 3.30mm); male anal segment with left ventral margin concave, with a short, stout process on right side (Fig. 27); genital styles relatively shorter (Fig. 30); phallus with 1 long, slender spinous process at apex (Fig. 29). . . . . *B. lanpingensis*

*Belocera sinensis* Muir, 1913  
(Figs. 1-11)

*Belocera sinensis* Muir, 1913: 240.

*Belocera huangbiana* Kuoh, 1980:198, **syn. nov.**

**Description.** Length of body 2.00-2.10 mm (male), 2.50-2.55 mm (female); including forewing 3.25-3.50 mm (male), 3.75-3.90 mm (female).

**Coloration.** General coloration yellowish brown to brown. Eyes dark brown to blackish brown, ocelli reddish brown. Antennalscape with 2 dark brown stripes. Frons with apical 3/5 bright yellow, with basal 2/5 yellowish brown to brown. Genae bright yellow. Postclypeus, vertex, pronotum, mesonotum yellowish brown to brown. Thoracic and abdominal pleura bright yellowish white to bright yellow. Legs light gray. Forewings transparent, with a light yellowish white band along anterior margin, behind this with a parallel dark brown 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. Abdomen with dorsum dark brown, sterna yellowish white, lateral areas of each segment with several small brown spots.

**Head and Thorax.** Structural features as in generic descriptions. Head including eyes wider than pronotum (1.26:1.00). Vertex wider at base than long submedially about 2.44:1.00. Frons longer in middle line than wide at widest part about 1.35:1.00. Antennae with scape longer than wide at apex about 0.54:1.00, shorter than pedicel about 0.52:1.00. Pronotum shorter than vertex (0.88:1.00). Mesonotum longer than pronotum and vertex combined (1.94:1.00). Forewings longer in middle line than wide at widest part about 3.17-3.53:1.00.

**Male Genitalia.** Male anal segment (Fig. 7) with ventral margin concave medially, without process. Pygofer in caudal view (Fig. 7) with opening larger in length than width, ventral margin concave evenly, in lateral view (Fig. 8) with dorsal margin emarginate medially. Genital styles in caudal view (Fig. 7) parallel, inner angle round, outer angle

strongly produced, spoon-shaped, in lateral view (Fig. 11) nearly 7-shaped, outer angle acute at apex, dorsal margin emarginate. Phallus (Fig. 10) tubular, slender, constricted subapically, apes complex, with a long and twisted process arising from left dorsal aspect, curved basad then left, another short and narrow process arising from base of long one, directed opposite. Phallobase simple, semicylindrical covered on dorsal aspect of phallus.

**Female Genitalia.** Female pygofer (Fig. 9) with first valvifers moderately large. Ovipositor as long as pygofer. Gonangulum small, acute at apex, separated from first valvifers and apart from first valvulae.

**Material Examined.** 4 males and 2 females, CHINA: Guizhou Province, Luodian, Bamao (25°25'N, 106°44'E), 400 m, 2-VIII-1998, X.-S. Chen; 1 male, Guizhou Province, Libo, Maolan (25°24'N, 107°52'E), 24-V-1998, X.-S. Chen; 13 males and 15 females, Guangdong Province, Guangzhou (23°08'N, 113°14'E), 22-XI-2006, X.-S. Chen.

**Host Plant.** *B. multiplex* (Yang & Yang 1986), *B. sinospinosa*.

**Distribution.** South China (Macao; Taiwan: Taipei; Guizhou: Luodian, Libo; Hainan: Nada).

**Discussion.** This species resembles *B. nigrinotalis*, but differs in the following: the latter with dorsum of body fuscous or blackish brown; furcation of Cu vein of forewings without dark spot; male pygofer with ventral margin sharply incised, V-like; genital styles with apex forked; phallobase complex, with developed process. Based on the similarity of descriptions and the illustrations, *Belocera huangbiana* Kuoh, 1980, should be a junior synonym of *B. sinensis* Muir.

*Belocera nigrinotalis* Ding and Yang, 1986

*Belocera nigrinotalis* Ding and Yang, 1986: 417.

**Description.** The descriptions are reproduced from Ding et al. (1986), and redescrptions of male genitalia are made based on the illustrations of Ding et al. (1986). "Length of body 1.90 mm (male), 2.10 mm (female); including forewing 3.30 mm (male), 3.70 mm (female)."

**Coloration.** "General coloration dark brown to blackish brown at dorsal aspect, and bright yellow in ventral view. Frons with basal part including eyes and antennae except base and middle of first segment bright yellow, are dark brown. Antennae with second segment, legs, pleurites between fore and median legs dark yellowish brown. Propleura and mesopleura bright yellow. Tegmina with a yellow band along anterior margin, behind this with a parallel longitudinal blackish brown marking along the anterior margin then curved into the Rs vein, at the end of each longitudinal vein with a small blackish brown spot. Female with coloration slightly paler, pronotum and ovipositor brown to dark brown."

**Head and Thorax.** "Head including eyes wider than pronotum (1.10:1.00). Vertex wider at base than long submedially about 2.40:1.00. Frons longer in middle line than wide at widest part about 1.30:1.00. Antennae with basal segment longer than wide at apex about 0.73:1.00, shorter than second segment about 0.44:1.00. Pronotum shorter than vertex (0.71:1.00). Mesonotum longer than pronotum and vertex combined (2.07:1.00). Tegmina longer in middle line than wide at widest part about 3.09:1.00."

**Male Genitalia.** Male anal segment (Ding et al. 1986: Fig. 3) ring-like, without process on ventral margin. Pygofer in caudal view with opening larger in length than width, ventral margin incised sharply, V-like. Genital styles in caudal view (Ding et al. 1986: Figs. 4, 5) parallel, forked at apex, inner angle same size as outer angle. Phallus (Ding et al. 1986: Fig. 6) tubular, very slender, long, with two spinous processes subapically, directed basad, of which, left one longer and larger. Phallobase complex, entwining base of phallus, with large process on ventral margin.

**Material examined.** No specimen has been collected by the authors.

**Host Plant.** Bamboo (Ding et al. 1986).

**Distribution.** Southwest China (Yunnan: Jinghong, Menghai).

**Discussion.** This species resembles *B. sinensis*, but differs in the following: the latter with dorsum of body light yellowish brown; furcation of Cu vein of forewings with a dark spot; male pygofer with ventral margin concave evenly; genital styles with apex spoon-shaped; phallobase simple, semicylindrical.

*Belocera fuscifrons* Chen, 2002  
(Figs. 12-22)

*Belocera fuscifrons* Chen, 2002: 164.

**Description.** Length of body 2.50-2.70 mm (male), 3.00-3.20 mm (female); including forewing 4.20-4.45 mm (male), 5.00-5.30 mm (female).

**Coloration.** General coloration brown to dark brown. Eyes dark brown to blackish brown, ocelli reddish brown. Basal segment of antennae with two strips blackish brown. Genae with basal part yellowish brown. Frons, postclypeus, vertex, pronotum, mesonotum brown to dark brown. Thorax and abdomen with pleura bright yellowish white to bright yellow. Legs light brown to brown. Forewings transparent, with a light yellowish white band along anterior margin, behind this with a parallel longitudinal dark brown 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. Abdomen with dorsum dark brown, sterna brown medially, lateral areas of each segment bright yellowish white to bright yellow, with several dark brown spots. Pygofer yellowish

brown to dark brown. Frons of female with 4 pairs of small light spots beside of median carina.

**Head and Thorax.** Structural features as in generic descriptions. Head including eyes wider than pronotum (1.12:1.00). Vertex wider at base than long submedially about 2.75:1.00. Frons longer in middle line than wide at widest part about 1.35:1.00. Antennae with basal segment longer than wide at apex about 0.81:1.00, shorter than second segment about 0.50:1.00. Pronotum shorter than vertex (0.90:1.00). Mesonotum longer than pronotum and vertex combined (2.43:1.00). Tegmina longer in middle line than wide at widest part about 3.39-3.56:1.00.

**Male Genitalia.** Male anal segment (Fig. 17) with ventral margin incised medially, without process on ventral margin. Pygofer in caudal view with opening larger in length than width, ventral margin concave U-like, in lateral view (Fig. 18) with dorsal margin slightly emarginated medially, posterior margin near ventral margin produced into a round process. Genital styles in caudal view (Figs. 17, 21) parallel, inner angle round, outer angle strongly curved to laterodorsad, in lateral view (Fig. 22) broad at apex, apical margin truncate, outer angle narrowing apically, dorsal margin emarginated. Phallus (Fig. 20) tubular, slender, constricted subapically, end complex, with 3 spinous processes, posterior one short and thick, left one long and slender. Phallobase complex, entwining base of phallus, ventral margin with a stout process, narrowing apically and curved basally.

**Female Genitalia.** Female pygofer (Fig. 19) with first valvifers narrower and smaller. Ovipositor slightly shorter than pygofer. Gonangulum large, apical margin truncate, connected first valvifers, approaching first valvulae.

**Material Examined.** 4 females, CHINA: Guizhou Province, Libo, Maolan (25°24'N, 107°52'E), 550m, 20-V-1998, X.-S. Chen; 2 females (holotype and paratype), Guizhou Province, Libo, Maolan, 24-25-V-1998, X.-S. Chen; 6 males, 10 females, Guizhou Province, Fuquan, Huangsi (26°42'N, 107°30'E), 2-IX-2006, L. Yang and X.-S. Chen.

**Host Plant.** *B. emeiensis*, *D. tsiangii* (Chen 2002), *N. affinis*.

**Distribution.** Southwest China (Guizhou: Libo, Fuquan).

**Discussion.** This species resembles *B. ampelocalamus*, but differs in the following: the latter with frons brown evenly, without small light spot; forewings without any dark brown spot; male pygofer with 3 medioventral processes on ventral margin. It is distinguished from *B. sinensis* and *B. lanpingensis* by larger body size (body length including tegmen longer than 4.2 mm).

*Belocera lanpingensis* Chen and Yang **sp. nov.**  
(Figs. 23-30)

**Description.** Length of body 2.10 mm (male); including forewing 3.30 mm (male).

**Coloration.** General coloration yellowish brown to brown. Eyes dark brown, ocelli reddish brown. Basal segment of antennae two blackish brown stripes. Genae with basal part yellowish white. Frons and genae with pairs of small light spots. Frons, postclypeus, vertex, pronotum, and mesonotum yellowish brown to brown. Thorax and abdomen with pleura yellowish white. Legs yellowish brown to brown, with dark brown spots. Tegmina transparent, with light yellowish white band along anterior margin, behind this with a parallel longitudinal dark brown 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. Abdomen with dorsum blackish brown, sterna blackish brown medially, lateral areas of each segment yellowish white, with several small dark brown spots. Pygofer yellowish brown.

**Head and Thorax.** Structural features as in generic descriptions. Head including eyes wider than pronotum (1.10:1.00). Vertex wider at base than long submedially about 2.15:1.00. Frons longer in middle line than wide at widest part about 1.23. Antennae with basal segment longer than wide at apex about 0.63:1.00, shorter than second segment about 0.36:1.00. Pronotum shorter than vertex (0.80:1.00). Mesonotum longer than pronotum and vertex combined (1.97:1.00). Tegmina longer in middle line than wide at widest part about 3.47:1.00.

**Male Genitalia.** Male anal segment (Fig. 27) with left ventral margin concave, with a stout, very short process at right side. Pygofer in caudal view (Fig. 27) with opening larger in length than width, ventral margin concave U-like, in lateral view (Fig. 28) with dorsal margin straight, posterior margin near ventral margin produced into an acute process. Genital styles short, stout and twisted, in caudal view (Fig. 27) outer margin convex, inner and outer angle round, in lateral view (Fig. 30) with apical margin truncate, outer angle narrowing apically, dorsal margin sinuated. Phallus (Fig. 29) tubular, slender, apex acute, with one thick process subapically on left side, another spinous process narrow and long, arising from base of above one, directed base of phallus. Phallobase complex, entwining base of phallus.

**Female.** Unknown.

**Material Examined.** Holotype male, CHINA: Yunnan Province, Lanping (26°30'N, 99°16'E), 2900 m, 13-VIII-2000, X.-S. Chen.

**Host Plant.** *Phyllostachys* sp.

**Etymology.** The specific name refers to the type locality, Lanping, Yunnan Province.

**Distribution.** Southwest China (Yunnan: Lanping).

**Discussion.** This species resembles *B. sinensis*, but differs in the following: the latter with the apical part of frons bright yellow; male anal segment without process on ventral margin; male

pygofer concave evenly; genital styles relatively long; phallobase simple. It is distinguished from *B. fuscifrons* by smaller body size (body length including forewing less than 3.5 mm), by male anal segment with ventral margin incised medially, and by phallus with 3 spinous processes at apex.

*Belocera ampelocalamus* Chen and Tsai **sp. nov.**

(Figs. 31-40)

**Description.** Length of body 2.4 mm (male), 3.0 mm (female); including forewing 4.40 mm (male), 5.20 mm (female).

**Coloration.** General coloration brown to dark brown. Eyes dark brown to blackish brown, ocelli reddish brown. Basal segment of antennae with 2 dark brown stripes. Genae with basal part yellowish brown. Frons, postclypeus, vertex, pronotum and mesonotum yellowish brown to brown. Thorax and abdomen with pleura yellowish white. Legs yellowish brown to brown. Tegmina transparent, with a light yellowish white band along anterior margin, behind this with a parallel longitudinal dark brown 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. Abdomen with dorsum dark brown, sterna light brown to brown medially, lateral areas of each segment yellowish white, with several small brown spots. Pygofer light brown. Female with ovipositor dark brown.

**Head and Thorax.** Structural features as in generic descriptions. Head including eyes wider than pronotum (1.17:1.00). Vertex wider at base than long submedially about 2.56:1.00. Frons longer in middle line than wide at widest part about 1.24:1.00. Antennae with basal segment longer than wide at apex about 0.75:1.00, shorter than second segment about 0.36:1.00. Pronotum shorter than vertex (0.94:1.00). Mesonotum longer than pronotum and vertex combined (2.24:1.00). Tegmina longer in middle line than wide at widest part about 3.43:1.00.

**Male Genitalia.** Anal segment (Fig. 35) with ventral margin incised medially, without process. Pygofer in caudal view (Fig. 35), with opening larger in length than width (2.36:1.00), ventral margin with 3 medioventral processes (Fig. 37), pygofer in lateral view (Fig. 36) with dorsal margin straight, posterior margin convex caudad, sinuate. Genital styles moderately long, in caudal view (Fig. 35) parallel, constricted subapically, inner angle small, outer angle strongly produced, spoon-shaped, in lateral view (Fig. 40) constricted at basal 1/3, outer angle acute at apex, dorsal margin emarginated. Phallus (Fig. 39) tubular, slender, end complex, with one tear-shaped process and three long spinous processes, one long process arising ventral margin of apex, curved dorsad, almost reaching base of phallus, another process arising from right base of long one, curved

ventrad, then left, directed dorsad, the third one arising from ventral margin of phallus, twisted at apical 2/3. Phallobase complex, twisted, enwinding base of phallus, a leaf-shaped process arising from ventral margin, covered middle aspect of phallus.

**Female Genitalia.** Female pygofer (Fig. 38) with first valvifers broad and large. Ovipositor shorter than pygofer distinctly. Gonangulum broad and large, apex round and blunt, connected first valvifers and first valvulae.

**Material Examined.** Holotype male, CHINA: Guizhou Province, Daozhen, Dashahe Nature Reserve (28°53'N, 107°36'E), 640 m, 25-VIII-2004, X.-S. Chen; 1 female, same data as for holotype.

**Host Plant.** *Ampelocalamus scandons*.

**Etymology.** This new species is named after the generic name of host plant, *Ampelocalamus scandons* (Bambusoideae).

**Distribution.** Southwest China (Guizhou: Daozhen).

**Discussion.** This species resembles *B. fuscifrons*, but differs in the following: the latter with frons bear several small light spots; forewings with furcation of Cu vein and the end of each longitudinal vein with respectively a small dark brown spot; male pygofer with ventral margin concave U-like, without medioventral process; female with first valvifers narrower, apical margin of gonangulum truncate.

#### ACKNOWLEDGMENTS

This research was supported by the National Natural Science Foundation of China (No. 30100015, 30560020), by Program for New Century Excellent Talents in University, by China Postdoctoral Science Foundation (No. 2005037111), by the Provincial Foundation for Excellent Youth in Science and Technology Field of Guizhou (No. 20050520), and by the Nomarch Foundation for Excellent Talents in Science, Technology and Education Field of Guizhou (No. 2005357). This research was also supported by the Florida Agricultural Experiment Station.

#### REFERENCES CITED

- CHEN, X.-S. 2002. Homoptera: Delphacidae, pp. 155-166 In Z.-Z. Li and D.-C. Jin [eds.], *Insects from Maolan Landscape*. Guizhou: Guiyang, Guizhou Science and Technology Publishing House (in Chinese with English summary).
- CHEN X.-S. 2003a. A new species of the genus *Neobelocera* (Homoptera: Delphacidae) from China. *Zootaxa* 290: 1-4.
- CHEN X.-S. 2003b. Key to genera of the tribe Tropidoccephalini from the People's Republic of China with description of a new genus. *Canadian Entomol.* 135: 811-821.
- CHEN X.-S., AND A.-P. LIANG. 2005. A Taxonomic study of the genus *Neobelocera* (Homoptera: Fulgoroidea: Delphacidae). *Acta Zootax.* Sin. 30: 166-170.
- DING J.-H., AND C.-L. HU. 1991. Notes on male *Neobelocera zhejiangensis* (Zhu) comb. nov. (Homoptera:

- Delphacidae). Acta Ent. Sin. 34: 250 (in Chinese with English summary).
- DING J.-H., L.-F. YANG, AND C.-L. HU. 1986. Descriptions of new genera and species of Delphacidae attacking bamboo from Yunnan Province, China. Acta Entomol. Sinica 29: 415-425 (in Chinese with English summary).
- KUOH C.-L. 1980. Descriptions of five new species of Delphacidae (Homoptera). Acta Entomol. Sinica 23: 195-201 (in Chinese with English summary).
- KUOH C.-L., J.-H. DING, L.-X. TIAN, AND C.-L. HUANG. 1983. Economic insect fauna of China, fasc. 27, Homoptera, Delphacidae. Econ. Ins. Fauna China 27: 1-166 (in Chinese with English summary).
- MUIR F. 1913. On some new Fulgoroidea. Proc. Hawaii. Ent. Soc. 2:237-269.
- MUIR F. 1915. A contribution towards the taxonomy of the Delphacidae. Canadian Entomol. 47:317-320.
- YANG L., X.-S. CHEN, AND H.-M. CHEN. 1999. Notes on planthoppers infesting bamboo in Guizhou. Journal of Mountain Agriculture & Biology 18: 154-161 (in Chinese with English summary).
- YANG J.-T., AND C.-T. YANG. 1986. Delphacidae of Taiwan (I) Asiracinae and the tribe Tropidocephalini (Homoptera Fulgoroidea). Taiwan Mus. Spec. Publ. 6: 1-79.
- ZHU K.-Y. 1988. Description of a new species of *Belocera* from China (Homoptera: Delphacidae). Acta Zootax. Sin. 13: 397-399 (in Chinese with English summary).