



New genus and new species of the tribe Augilini (Hemiptera, Fulgoromorpha: Caliscelidae) from Yunnan Province in China

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Abstract

New genus and new species of bamboo-feeding planthopper tribe Augilini, *Neosymplana vittatum* **gen. et sp. n.** is described from southwestern China. A key to Chinese genera of Augilini is given. The photos of the habitat of the species described are provided.

Key words: Ommatidiotinae, taxonomy, new genus, new species, bamboo, Oriental region

Introduction

The family Caliscelidae Amyot & Audinet-Serville, 1843 is a worldwide distributed small group with two subfamilies (Caliscelinae, Ommatidiotinae) with five tribes (Caliscelini, Peltonotellini, Ommatidiotini, Adenissini, Augilini), 77 genera, and more than 240 species (Gnezdilov 2013; Bourgoïn 2020) all known in China (Emeljanov 2008; Che *et al.* 2006, 2009, 2011; Chen and Zhang 2011; Chen *et al.* 2014; Gnezdilov 2008, 2013, 2015, 2018; Meng *et al.* 2015; Yang and Chen 2014; Gong *et al.* 2018a,b).

Currently, the tribe Augilini comprises 14 genera with 29 species found in the Oriental and Afrotropical regions (Gnezdilov and Bourgoïn 2009; Gnezdilov 2011; Gong *et al.* 2018b). One more genus and species is reported from Dominican amber in New World (Bourgoïn *et al.* 2016). In China all Augilini are known from south and reported to feed on bamboo (Che *et al.* 2009; Chen *et al.* 2014; Gong *et al.* 2018b, Bourgoïn, 2020).

In the present paper, the new genus *Neosymplana* **gen. n.** is described from Yunnan province. According to the forewing with clavus relatively long, hindwing well developed; abdomen elongate, narrowly cylindrical, with anterior and posterior margins of terga and sterna respectively transverse and chevron-like (Gong *et al.* 2018b), and the characters of Augilini are given in Gnezdilov (2011). The new genus should be placed in the tribe Augilini. A key to Augilini known from China is given.

Materials and methods

Terminology follows Fennah (1987) and Chan & Yang (1994). The standard terminology for hind and forewing venation follows Bourgoïn *et al.* (2015). 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. Measurements were given in millimeters; body length was 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% NaOH, washed in water and transferred to glycerin. Illustrations of the specimens were made with a Leica MZ 12.5 stereomicroscope. Photographs were taken with KEYENCE VHX-1000 system. Illustrations were scanned with CanoScan LiDE 200 and imported into Adobe Photoshop CS6 for labelling and plate composition.

The type specimens and material examined are deposited in the Institute of Entomology, Guizhou University, Guiyang, China (IEGU).

Key to Chinese genera of Augilini

1. Head with long spiny process. Fore femora and tibiae flattened. Frons without carinae; apical segment of rostrum with width at least broader than long (Chen *et al.* 2014: figs 2–95) *Augilodes* Fennah, 1963
- Head without process. Fore femora and tibiae not flattened. Frons with three carinae; apical segment of rostrum with distinctly narrower than long 2
2. Vertex strongly produced 3
- Vertex not produced or slightly produced 4
3. Vertex tilted up (Chen *et al.* 2014: figs 2–97, 98, 99) *Symplana* Kirby, 1891
- Vertex tilted down (Figure 7) *Neosymplana* gen. n.
4. Forewing with nodal transverse line (Fennah 1987: figure 6) *Symplanella* Fennah, 1987
- Forewing without nodal transverse line 5
5. Male anal segment long, lateral margin with a verruciform process (Gong *et al.* 2018b: figs 15, 27) *Youtuus* Chen & Gong, 2018
- Male anal segment short; lateral margin without any verruciform process (Che *et al.* 2009: figure 13) *Pseudosymplanella* Che, Zhang & Webb, 2009

Neosymplana Chen & Gong, gen. n.

Type species. *Neosymplana vittatum* sp. n., here designated.

Description. Head with eyes narrower than width of pronotum. Vertex (Fig. 5) with anterior margin strongly produced roundly, posterior margin nearly right-angularly concave, disc slightly depressed. Frons (Fig. 6) with length in midline distinctly longer than maximum width, median carina and sublateral carinae complete, widest at level of second segment of antennae. Clypeus (Fig. 6) with median carinae distinct. Rostrum long, reaching mesotrochanters. Ocelli present. Vertex and frons joint at acute angle in lateral view. Pronotum (Fig. 5) with length in midline shorter than length behind eyes, with anterior margin roundly convex, posterior margin broadly concave; lateral carinae distinct. Mesonotum (Fig. 5) with median carina obscure, lateral carinae weak and subparallel. Forewing (Fig. 8) subhyaline, relatively narrow; veins distinct, claval suture present, ScP+R and M united in basal sixth, ScP+R forking close to nodal transverse line; MP with three branches after nodal line; CuA with two branches after nodal line; Pcu uniting A_1 at basal 1/2 of clavus; four subapical cells and eight apical cells. Hindwing (Fig. 9) hyaline, as long as forewing, with 3 lobes, cubital cleft weakly, anal cleft deep; ScP and RP single, MP and CuA each with 2 branches. Legs relatively long, hind tibia with single lateral spine medially and with 7 apical spines.

Male genitalia. Anal segment (Figs 10–12) bifurcated in dorsal view, with two stick-like processes. Pygofer (Fig. 11) in lateral view with dorsal margin distinctly shorter than ventral margin, latero-posterior margin strongly concave, medioventral plate (Figs 13, 15) broad and short. Genital style (Fig. 14) long and narrow, dorsal margin with apical half dorsally uplifted. Aedeagus (Figs 16–17) strongly curved, fused with connective, both forming C-shaped, with a pair of long spines beside of aedeagal shaft.

Remarks. This new genus is closely related to *Symplana*, but differs in: 1) vertex tilted down (vertex tilted up in *Symplana*); 2) anal segment bifurcated, with paired stick-like processes (anal segment simple in *Symplana*); 3) pygofer with medioventral plate (without medioventral plate in *Symplana*).

Etymology. The genus name is a combination of the Latin words “*neo* (means new)” and “*Symplana* (similar genus)”, related to the similar appearance to the genus *Symplana*. Gender masculine.

Host plant. Bamboo.

Distribution. Southwestern China (Yunnan).

Neosymplana vittatum Gong, Yang & Chen, sp. n.

Figs 1–17, 19–21

Measurements. Body length including forewing: male 6.8–6.9 mm (N = 6), female 6.8–7.5 mm (N = 8); forewing length: male 5.3–5.5 mm (N = 6), female 5.3–5.8 mm (N = 8).

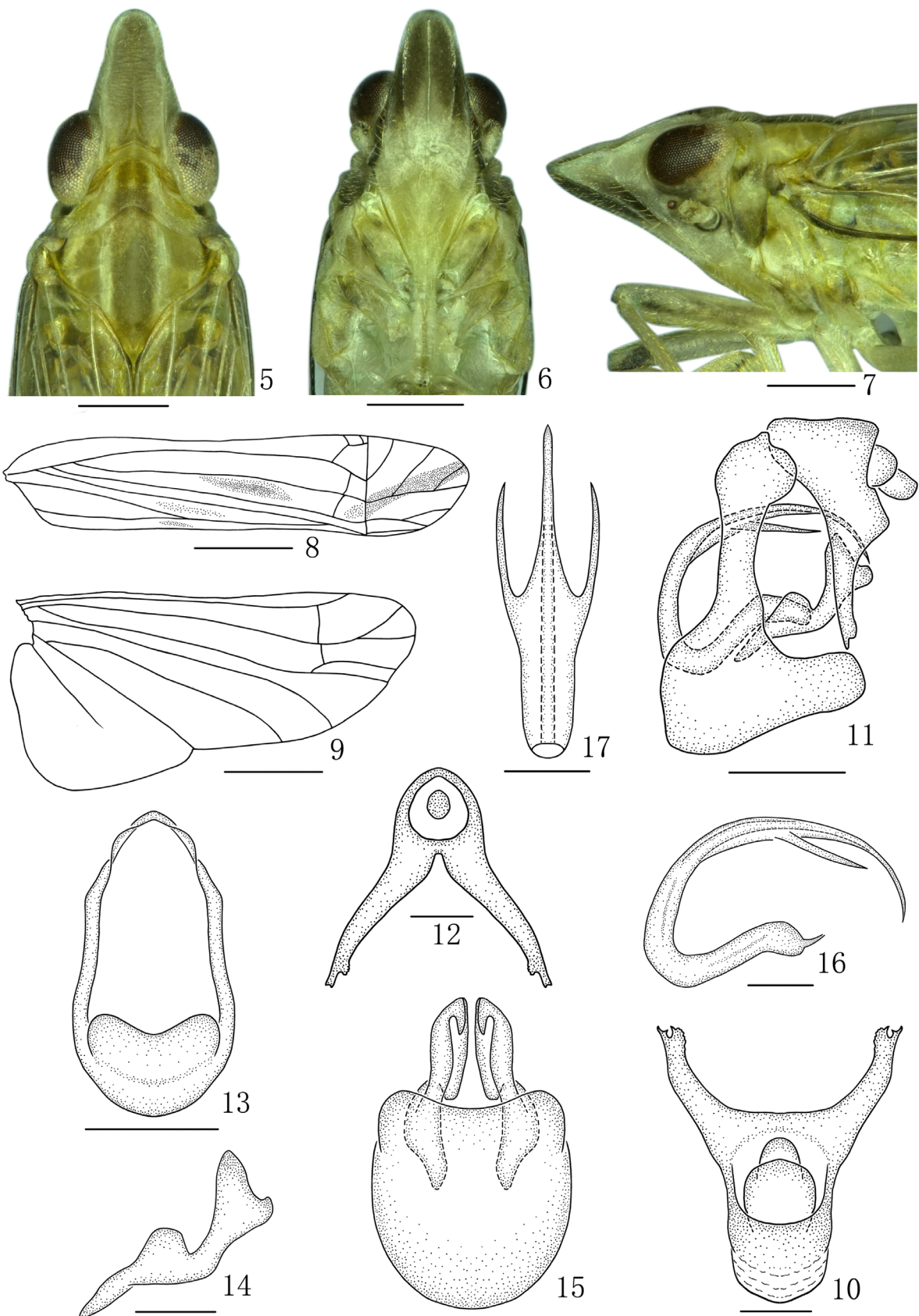
Description. *Coloration.* General coloration pale yellow with somewhat green (Figs 1–4). Ocelli reddish brown, eyes black brown. Pedicel with a black transverse spot near apex. Frons mostly blackish brown. Clypeus yellow. Vertex slightly brown. Forewing subhyaline, with a small light brown longitudinal stripe in middle, with two smaller stripes near posterior margin and a large dark brown longitudinal stripe running from its apical 1/4 to its apical margin. Hindwing hyaline. Abdominal sternites with lateral margins fuscous.



FIGURES 1–4. *Neosymplana vittatum* Gong, Yang & Chen, sp. n. 1 Male habitus, dorsal view 2 Male habitus, lateral view 3 Female habitus, dorsal view 4 Female habitus, lateral view. Scale bars: 0.5 mm (1–4).

Head and thorax. Vertex (Fig. 5) longer in middle line than broad at base (2.0:1). Frons (Fig. 6) 1.9 times longer in middle line than widest part. Pronotum (Fig. 5) shorter in middle line than vertex (1:2.8). Mesonotum (Fig. 5) 0.7 times as long as vertex and pronotum together in middle line. Forewing (Fig. 8) with length 4.7 times than broad at widest part. Hindwing (Fig. 9) with length 2.0 times than broad at widest part.

Male genitalia. Anal segment in dorsal view (Fig. 10) with base mostly stout, broadening to apical part, at widest part bifurcated, each side with one stick-like process, slightly curved in the middle, apex with two branches with some micro teeth; in lateral view (Fig. 11) dorsal margin slightly concave, apically broadening to apical 1/3 widest, thence narrowed, apical 1/3 abruptly narrowed, ventral margin roundly concave in the middle. Pygofer in lateral view (Fig. 11) with dorsal margin distinctly shorter than ventral margin, posterior margin with upper 1/5 roundly convex, lower 1/4 strongly convex; in posterior view (Fig. 13) nearly oval, with length 1.9 times as long as widest part; in ventral view (Fig. 15) with a stout and short medioventral plate at posterior margin, roundly concave in the middle, anterior margin roundly convex. Genital style in lateral view (Fig. 14) with apical margin broadly concave, dorsal margin with apical half dorsally uplifted; in ventral view (Fig. 15) with apex nearly hook-like. Aedeagus in



FIGURES 5–17. *Neosymplana vittatum* Gong, Yang & Chen, **sp. n.**, male **5** Head and thorax, dorsal view **6** Face **7** Head and thorax, lateral view **8** Forewing **9** Hindwing **10** Anal segment, dorsal view **11** Male genitalia, lateral view **12** Anal segment, posterior view **13** Pygofer, posterior view **14** Genital styles, lateral view **15** Pygofer and genital styles, ventral view **16** Aedeagus, lateral view **17** Aedeagus, dorsal view. Scale bars: 1 mm (**8–9**), 0.5 mm (**5–7, 11, 13**), 0.2 mm (**12, 14–17**)

lateral view (Fig. 16) with base slightly broad, narrowing apically, periandrium curved ventrally; in dorsal view (Fig. 17) with basal half broad, apical half abruptly narrowed, stick-like, each side with one spine-like aedeagal process at widest part.



FIGURE 18 The habitat photo of *Neosymplana vittatum* **sp. n.** (19 August 2015, Yingjiang County, photograph by Xiangsheng Chen)



FIGURE 19 *Neosymplana vittatum* **sp. n.** (19 August 2015, Yingjiang County, photograph by Xiangsheng Chen)



FIGURE 20 *Neosymplana vittatum* sp. n. (16 August 2018, Yingjiang County, photograph by Xinyi Zheng)



FIGURE 21 *Neosymplana vittatum* sp. n. (16 August 2018, Yingjiang County, photograph by Xinyi Zheng)



FIGURE 22 *Bambusa burmanica* Gamble - host plant of *Neosymplana vittatum* sp. n. (16 August 2018, Yingjiang County, photograph by Nian Gong)

Type material. Holotype: ♂, China: Yunnan Province, Yingjiang County, Yingjiang National Wetland Park (24°69'N, 97°93'E), on bamboo, 17 August 2015, Xiangshen Chen.

Paratypes: 3♂♂, 2♀♀, data same as holotype, Lin Yang; 20♂♂, 32♀♀, data same as holotype, 16 August 2018, Qiang Luo and Nian Gong; 2♂♂, 4♀♀, China: Yunnan Province, Longchuan County, Chengguan (24°33'N, 97°96'E), on bamboo, 19 August 2015, Xiangshen Chen and Lin Yang; 5♂♂, 8♀♀, China: Yunnan Province, Lianghe County, Mengyang Town (24°78'N, 98°3'E), on bamboo, 25 July 2013, Weicheng Yang; 12♂♂, 23♀♀, China: Yunnan Province, Ruili County, Wanding Town (24°N, 97°83'E), on bamboo, 25 August 2018, Hongxing Li and Liangjin Yang.

Host plant. Bamboo (*Bambusa burmanica* Gamble).

Distribution. Southwestern China (Yunnan Province).

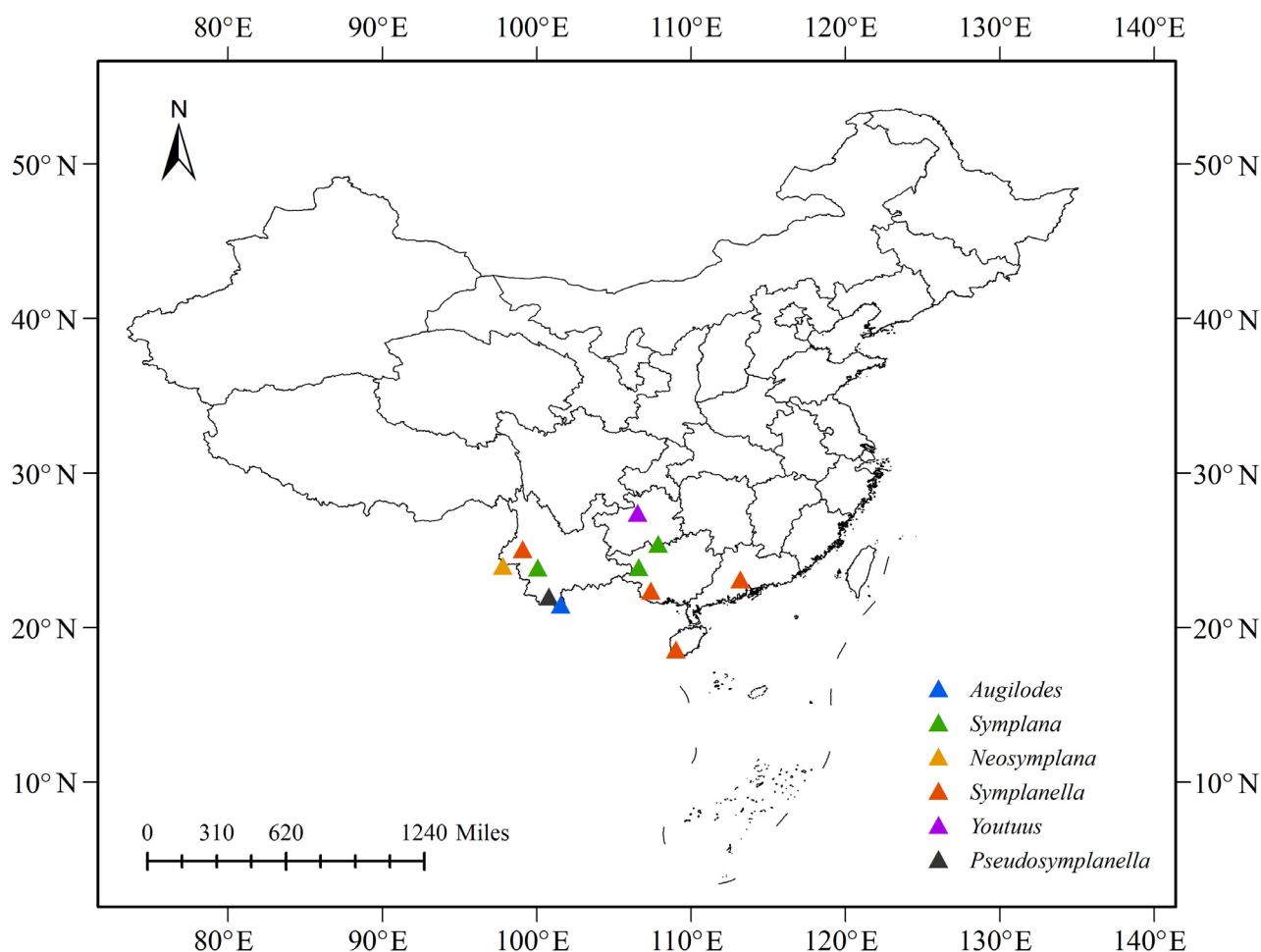


FIGURE 23. Geographic distributions of Chinese genera of Augilini.

Etymology. The specific name is derived from the Latin word “*vittatus*” which refer to its forewing with stripe.

Discussion

Similar to other known genera of the tribe Augilini, the genus *Neosymplana* **gen. n.** has a relatively long clavus of the forewing, often with a nodal line, and well developed hindwing; abdomen elongate, narrowly cylindrical, with anterior and posterior margins of terga and sterna respectively transverse and chevron-like.

Host plant. Our field survey showed that the new genus of Augilini occurring on bamboo (*Bambusa burmanica* Gamble) from Southwest China. The habitat of *Neosymplana vittatum* **sp. n.** are shown in Figures 18 to 22. According to Che *et al.* (2009), Gong *et al.* (2018b) and Chen *et al.* (2014), we can conclude that the genera *Pseudosymplanella*, *Symplana*, *Augilodes*, *Symplanella* and *Youtuus* of the tribe Augilini are also occurring on bamboo.

Distribution. Based on the results of our field survey and references, the six genera of tribe Augilini occurring in China, distributed in Yunnan, Guizhou, Hainan, Guangdong and Guangxi provinces (Fig. 23). The Chinese members of tribe Augilini seem to be restricted to the southern China.

Acknowledgements

The authors would like to thank colleagues Dr. Weicheng Yang, Dr. Qiang Luo, Dr. Hongxing Li, and Dr. Liangjing Yang for collecting specimens. We are also grateful to professor Gnezdilov (Zoological Institute, Russian Academy of Sciences, Russia) for reviewing the manuscript, and suggesting improvements. This work was supported by the (grant nos. 31472033, 32060343, 81460576); the Program of Excellent Innovation Talents, Guizhou Province (grant no. 20154021); the Program of Scientific Research Foundation for Introduced Talent of Guizhou University (grant no. 201718); the Science and Technology Program of Guizhou Province (grant no. 20181031); and the Science and Technology Support Program of Guizhou Province (grant no. 20201Y129).

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