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Two new species of the genus *Symplanella* Fennah (Hemiptera, Fulgoromorpha, Caliscelidae) from China

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Abstract

Two new species of the genus *Symplanella* Fennah, 1987 are described and illustrated from China. These are *S. fulva* Gong & Chen, **sp. nov.** and *S. nigricans* Gong & Chen, **sp. nov**. The photographs and identification keys of the new species together with other known species of the genus *Symplanella* are provided.

Key words: Fulgoroidea, Augilini, bamboo planthopper, taxonomy, morphology

Introduction

Fennah (1987) established the genus *Symplanella* with the type species, *S. breviceps* Fennah, 1987, described from Burma, in the family Issidae. Later Gnezdilov and Wilson (2006) transferred *Symplanella* to the family Caliscelidae. Currently this genus belongs to the tribe Augilini Baker of the subfamily Ommatidiotinae (Gnezdilov 2013). Zhang and Wang (2009) added one more species, *S. unipuncta* Zhang & Wang, 2009, to the genus and suggested a new combination, *S. brevicephala* (Chou, Yuan & Wang, 1994) (transferred from *Symplana* Kirby) from southern China. Recently Yang and Chen (2014) described three more species, *S. hainanensis*, *S. zhongtua* and *S. recurvata*, from southern China.

Below we describe two new species: *Symplanella fulva* Gong & Chen, **sp. nov.** and *S. nigricans* Gong & Chen, **sp. nov.** from Yunnan province of China, collected on bamboo. Thus the genus *Symplanella* currently contains eight species, including seven of them from southern China. A checklist and a key based on male genitalia to all known species are provided.

Materials and methods

The morphological terminology and measurements follow Chan & Yang (1994) and Yang & Chen (2014). Body length was measured from apex of vertex to tip of forewing. External morphology and drawings were done with the aid of a Leica MZ 12.5 stereomicroscope. Photographs of the types 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 dissected male genitalia are preserved in glycerine in small plastic tubes pinned together with the specimens.

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

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Taxonomy

Order Hemiptera Linnaeus, 1758

Suborder Fulgoromorpha Evans, 1946

Family Caliscelidae Amyot & Audinet-Serville, 1843

Subfamily Ommatidiotinae Fieber, 1875

Tribe Augilini Baker, 1915

Symplanella Fennah, 1987

Type species. *Symplanella breviceps* Fennah, 1987, by original designation.

Symplanella Fennah, 1987: 244; Zhang and Wang, 2009: 176; Chen et al., 2014: 173; Yang and Chen, 2014: 20.

Note. For the diagnosis and relationships of *Symplanella* see Yang and Chen (2014: 20) and Zhang and Wang (2009: 176).

Host plant. Bamboo.

Distribution. Burma, southern China (Yunnan, Hainan, Guangdong, Guangxi).

Checklist of species of *Symplanella* Fennah

S. brevicephala (Chou, Yuan and Wang, 1994); China (Yunnan).
S. breviceps Fennah, 1987; Burma (Dawna Hills).
S. fulva Gong and Chen, **sp. nov.**; China (Yunnan).
S. hainanensis Yang and Chen, 2014; China (Hainan).
S. nigricans Gong and Chen, **sp. nov.**; China (Yunnan).
S. recurvata Yang and Chen, 2014; China (Guangdong, Guangxi).
S. unipuncta Zhang and Wang, 2009; China (Hainan).
S. zhongtua Yang and Chen, 2014; China (Yunnan).

Key to species of genus *Symplanella* (modified from Yang and Chen, 2014) (males)

1. Frons and clypeus mostly blackish or dark brown **2**
- Frons and clypeus mostly not blackish or dark brown **5**
2. Head in lateral view with the apex acute (Yang and Chen, 2014: fig. 16) . . . . . ***S. hainanensis* Yang and Chen**
- Head in lateral view with the apex rounded **3**
3. Anal segment short (Figs 22–23) . . . . . ***S. nigricans* sp. nov.**
- Anal segment rather long **4**
4. Frons and clypeus mostly blackish brown (Yang and Chen, 2014: fig. 29); pygofer with one stout process at middle (Yang and Chen, 2014: fig. 32) . . . . . ***S. zhongtua* Yang and Chen**
- Frons and clypeus mostly dark brown (Chen et al., 2014: fig. 2–101, E); pygofer with one lobe-like process at dorsal posterior angle (Chen et al., 2014: figure 2–101, I) . . . . . ***S. brevicephala* (Chou, Yuan and Wang)**
5. Body mainly reddish yellow (Figs 1–2) . . . . . ***S. fulva* sp. nov.**
- Body mainly not reddish yellow **6**
6. Median of forewing with three branches (Fennah, 1987: fig. 6); genital style long in posterior view, posterior margin broadly concave (Fennah, 1987: fig. 5) . . . . . ***S. breviceps* Fennah**
- Median of forewing with four branches; genital style short in posterior view, posterior margin not concave or slightly convex **7**
7. Posterior margin of pygofer with one process (Zhang and Wang, 2009: fig. 6) . . . . . ***S. unipuncta* Zhang and Wang**
- Posterior margin of pygofer without process (Yang and Chen, 2014: fig. 9) . . . . . ***S. recurvata* Yang and Chen**

***Symplanella fulva* Gong & Chen, sp. nov.**
Figs 1–14

Measurements. Body length including forewing: male 6.2 mm (N = 1); forewing length: male 5.2 mm (N = 1).

Diagnosis. Body mainly reddish yellow (Figs 1–2); anal segment with some micro teeth at apical ventral margin (Fig. 9); laterodorsal angles of pygofer with some micro teeth, apex roundly convex (Fig. 9); in lateral view, dorsal margin of aedeagus with a process (Fig. 13).

Description. *Coloration.* Body mainly reddish yellow (Figs 1–5). Ocelli (Fig. 5) slightly red, semi-translucent; eyes (Figs 3–5) reddish brown. Antennae (Figs 4–5) with one black spot at apex of pedicel. Clypeus (Fig. 4) mostly yellow. Central area of vertex, pronotum and mesonotum pale red (Fig. 3). Forewings (Figs 1–2) subhyaline, veins yellow. Hind wing hyaline, veins slightly yellow. Abdominal sternites yellow with somewhat green. Tergites yellow. Spines of legs with black apices.

Head and thorax. Width of vertex including eyes as wide as pronotum. Vertex (Fig. 3) narrower in middle line than broad at widest part (1:1.8). Frons (Fig. 4) 1.3 times longer in middle line than widest part. Pronotum (Fig. 3) longer in middle line than vertex (1.1:1). Mesonotum (Fig. 3) 1.3 times longer than pronotum and vertex combined. Forewings (Fig. 6) 4 times longer than wide; veins obviously forming a nodal line, ScP + R and MP with common stem; after the nodal line, RP single, MP with three branches, CuA with two branches; Pcu uniting A1 at basal 2/5 of clavus. Hind wing (Fig. 7) 2.1 times as long as broad at widest part, ScP and RP single, MP and CuA with two branches.

Male terminalia. Anal segment (Figs 8, 9) tubular, in lateral view (Fig. 9) broad at basal half, abruptly narrowed at apical half, apex obtuse, with some micro teeth at apical ventral margin, dorsal margin almost straightly, ventral margin slightly waved; 1.8 times longer than wide in dorsal view (Fig. 8). Dorsal margin of pygofer in lateral view (Fig. 9) distinctly shorter than ventral margin, upper third of posterior margin deeply concave, lower fourth roundly convex, laterodorsal angles with some micro teeth at third of posterior margin, apex roundly convex; in posterior view (Fig. 10) nearly oval, with length 1.6 times than widest part; in ventral view (Fig. 12), posterior margin broadly concave in the middle, anterior margin slightly convex. Genital style in lateral view (Fig. 11) with median portion broad, large, with apical margin obtuse convex; dorsal margin uplifted with a process, covered with a lot of micro teeth at apex; in ventral view (Fig. 12) nearly pear-shaped. Aedeagus in lateral view (Fig. 13) with base slightly broad, apical part mostly straight and slender, dorsal margin with a process at middle; phallobase slender, peapod-like.

Type material. Holotype: ♂, **China:** Yunnan Province, Yingjiang County, Nabang Town (24°70′N, 97°90′E), on bamboo, 18 August 2018, Qiang Luo leg.

Host plant. Bamboo (*Neosinocalamus* sp.).

Distribution. China (Yunnan).

Etymology. The specific name is derived from the Latin words "*fulvus*", referring to the color of the body.

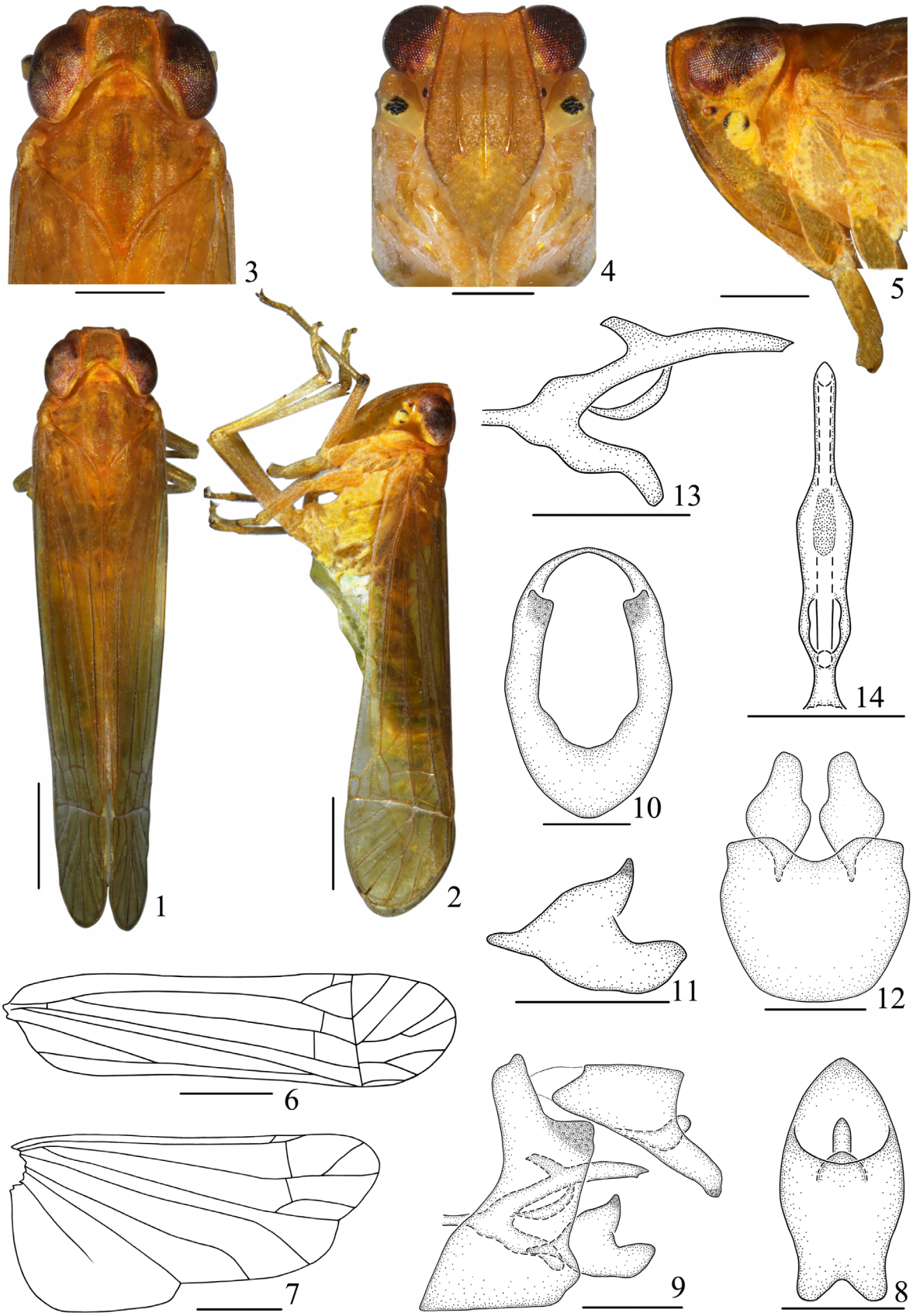
Remarks. This new species is similar to *S. brevicephala*, but differs in: 1) body mainly reddish yellow (mainly dark brown in *S. brevicephala*); 2) laterodorsal angles of pygofer with some micro teeth, apex roundly convex (without micro teeth, apex acute in *S. brevicephala*); 3) dorsal margin of aedeagus in lateral view with a process (without process in *S. brevicephala*).

***Symplanella nigricans* Gong & Chen, sp. nov.**
Figs 15–34

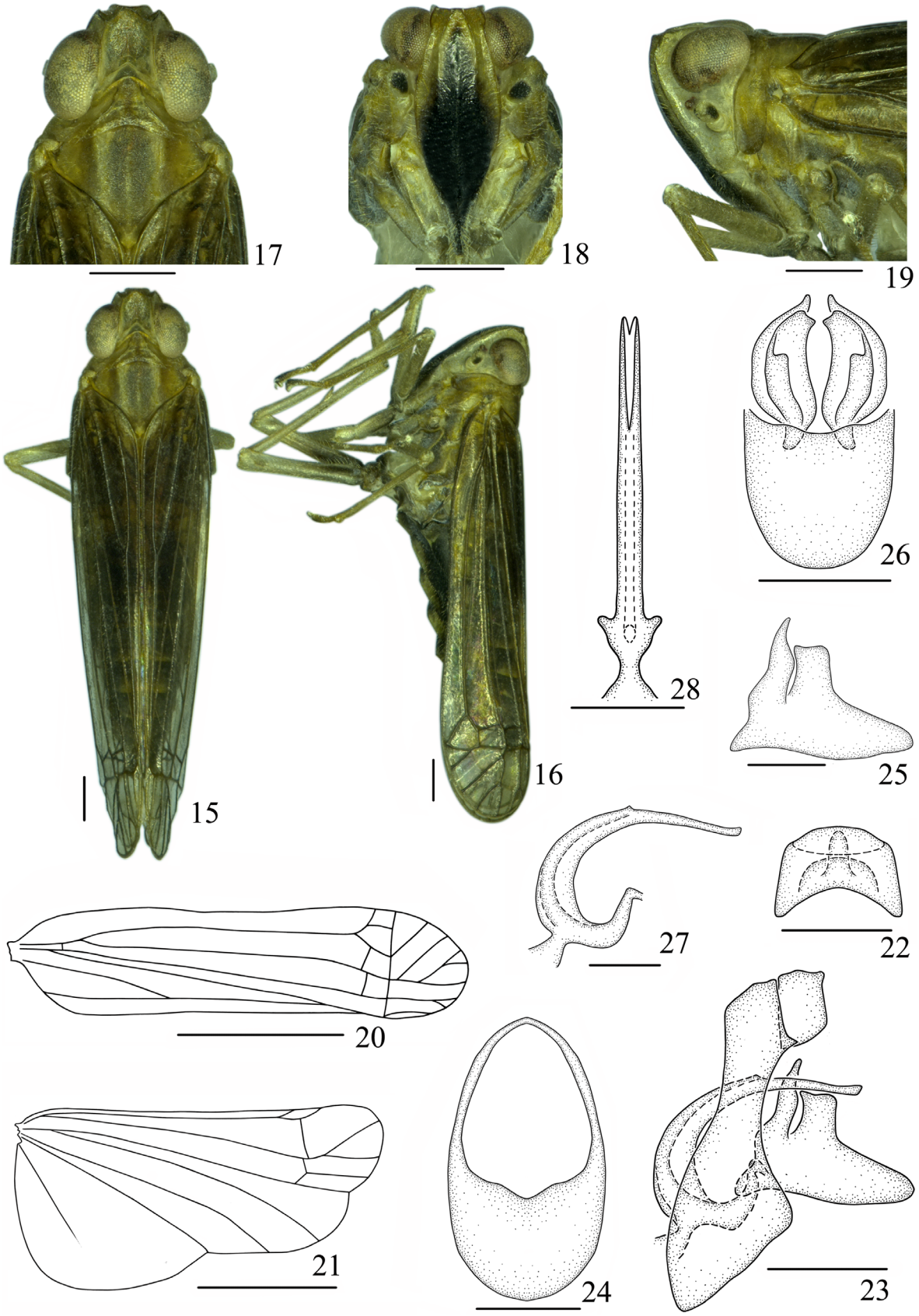
Measurements. Body length including forewing: male 6.1–6.2 mm (N = 3); forewing length: male 5.1–5.2 mm (N = 3).

Diagnosis. Anal segment very short (Figs 22–23); posterior margin of pygofer in lateral view broadly concave, one finger-like process at dorsal third, small (Fig. 23); genital style with two processes (Fig. 25); aedeagus tubular, slender and long, without process, opening dorsally at apex half, apex divided into two lobes (Figs 27–28).

Description. *Coloration.* Body mainly black brown with somewhat yellow (Figs 15–19). Ocelli (Fig. 19) slightly red, semi-translucent; eyes (Figs 17–19) taupe. Antennae (Figs 18–19) with one black spot at apex of pedicel. Frons (Fig. 18) with areas between sublateral carinae mostly black brown, lateral areas tawny. Clypeus (Fig. 18)



FIGURES 1–14. *S. fulva* **sp. nov.**, male **1** Male habitus, dorsal view **2** Male habitus, lateral view **3** Head and thorax, dorsal view **4** Face **5** Head and thorax, lateral view **6** Fore wing **7** Hind wing **8** Anal segment, dorsal view **9** Male genitalia, lateral view **10** Pygofer, posterior view **11** Genital styles, lateral view **12** Pygofer and genital styles, ventral view **13** Aedeagus, lateral view **14** Aedeagus, dorsal view. Scale bars 0.3 mm (**8–14**), 0.5 mm (**1–5**), 1 mm (**6–7**).



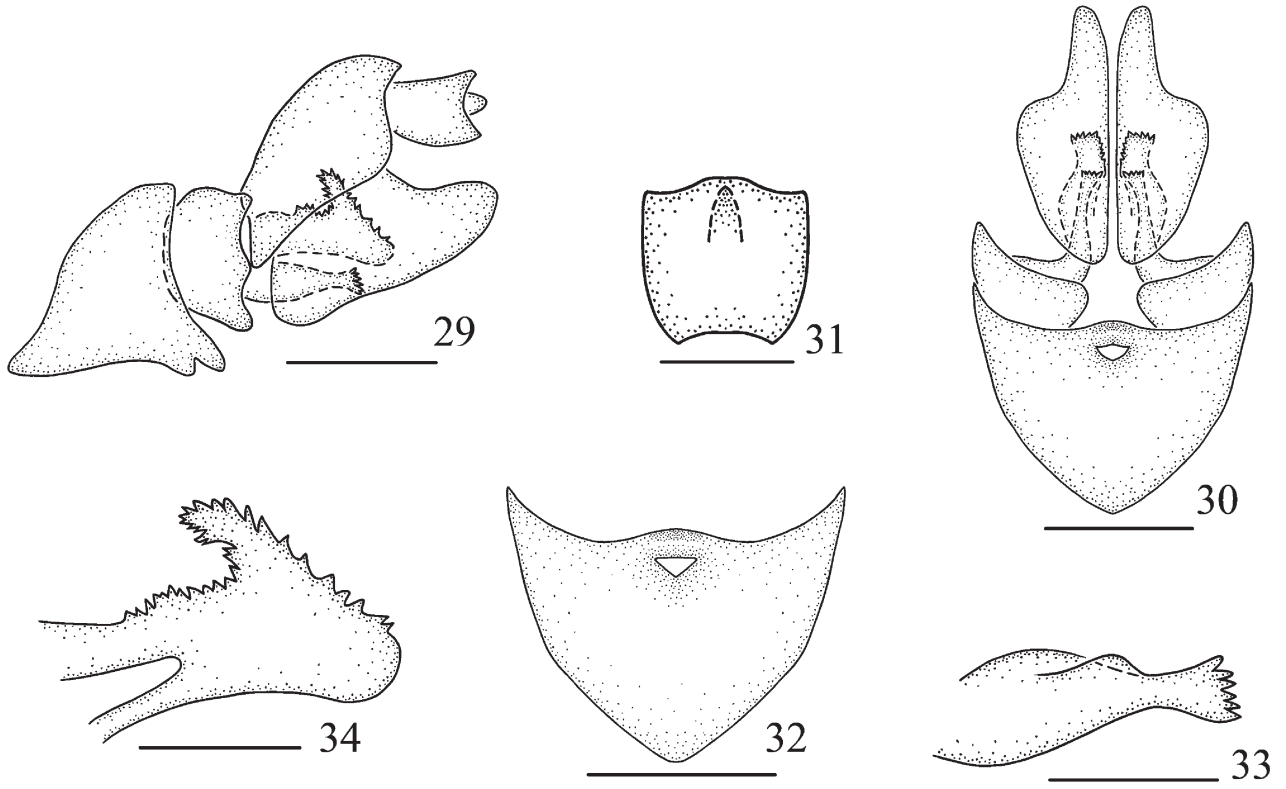
FIGURES 15–28. *S. nigricans* **sp. nov.**, male **15** Male habitus, dorsal view **16** Male habitus, lateral view **17** Head and thorax, dorsal view **18** Face **19** Head and thorax, lateral view **20** Fore wing **21** Hind wing **22** Anal segment, dorsal view **23** Male genitalia, lateral view **24** Pygofer, posterior view **25** Genital styles, lateral view **26** Pygofer and genital styles, ventral view **27** Aedeagus, lateral view **28** Aedeagus, dorsal view. Scale bars: 0.5 mm (**15–19, 23–24, 26**), 0.3 mm (**22, 25, 27–28**), 2 mm (**20–21**).

black. Forewings (Figs 15–16) subhyaline, veins brown. Hind wing hyaline, veins slightly brown. Abdominal sternites black brown with somewhat green. Tergites black brown. Spines of legs with black apices.

Head and thorax. Width of vertex including eyes as wide as pronotum. Vertex (Fig. 17) as long as wide. Frons (Fig. 18) 1.5 times longer in middle line than widest part. Pronotum (Fig. 17) shorter in middle line than vertex (1:1.1). Mesonotum (Fig. 17) 1.1 times longer than pronotum and vertex combined. Forewings (Fig. 20) 4.3 times longer than wide; veins obviously forming a nodal line, ScP + R and MP with common stem; after the nodal line, RP single, MP with four branches, CuA with two branches; Pcu uniting A1 at basal 2/5 of clavus. Hind wing (Fig. 21) 2.1 times as long as broad at widest part, ScP and RP single, MP and CuA with two branches.

Male terminalia. Anal segment (Figs 22, 23) tubular, short, in lateral view (Fig. 23) dorsal margin waved, ventral margin slightly convex; 1.6 times wider than length in dorsal view (Fig. 22). Ventral margin of pygofer in lateral view (Fig. 23) strongly oblique, posterior margin broadly concave, one finger-like process at dorsal third; in posterior view (Fig. 24) nearly oval, with length 1.8 times than widest part; in ventral view (Fig. 26), posterior margin sinuate, anterior margin broadly convex. Genital style in lateral view (Fig. 25) with median portion broad, large, with apical margin obtuse convex; dorsal margin with basal half dorsally uplifted and branched into two processes, the basal one curving, long and thin, with apical margin narrow convex, the apical one stout with apical margin broadly concave; in ventral view (Fig. 26) nearly petal-shaped. Aedeagus in lateral view (Fig. 27) with base slightly broad, apical part mostly slender, ventrally bend, opening dorsally at apex half, apex divided into two lobes.

Female terminalia. Abdominal sternite VII (Figs 30, 32) in ventral view symmetrical, posterior margin concave and slightly protruded medially, with a small triangle-like hole near the posterior margin medially. Anal tube (Figs 29, 31) short. Gonapophysis VIII (first valvula) (Fig. 33) elongate, with six spines at apical margin. Gonapophysis IX (second valvula) (Fig. 34) with two lobes symmetrical, each lobe with much spines at apical margin and dorsal margin. Gonoplac (third valvula) with outer surface shagreen (Figs 29, 30); in lateral view (Fig. 29) with median portion broad, large, apical margin convex; in ventral view (Fig. 30) blade-like.



FIGURES 29–34. *S. nigricans* **sp. nov.**, female. **29** Genitalia, lateral view **30** Genitalia, ventral view **31** Anal segment, dorsal view **32** Abdominal sternite VII, ventral view **33** Gonapophysis VIII, lateral view **34** Gonapophysis IX, lateral view. Scale bar: 0.5 mm (**29–30, 32**), 0.2 mm (**31, 33–34**).

Type material. Holotype: ♂, **China:** Yunnan Province, Yingjiang County, Nabang Town (24°70′N, 97°90′E), on bamboo, 18 August 2018, Nian Gong leg. Paratypes: 5♂♂, 7♀♀, data same as holotype, Hong-Xing Li leg.;

2♂♂, 4♀♀, China: Yunnan Province, Ruili County, near the Botanical Garden (24°01′N, 97°85′E), on bamboo, 23 August 2018, Nian Gong and Hong-Xing Li leg.

Host plant. Bamboo (*Neosinocalamus* sp.).

Distribution. China (Yunnan).

Etymology. The specific name is derived from the Latin word "*nigricans*", referring to the color of the face.

Remarks. This new species is similar to *S. zhongtua*, but differs in: 1) segment very short (relatively long in *S. zhongtua*); 2) posterior margin of pygofer in lateral view broadly concave, one finger-like process at dorsal third, small (posterior margin slightly sinuate, process at middle, relatively big in *S. zhongtua*); 3) genital style with two processes (without process in *S. zhongtua*).

Discussion

Distribution. According to the references and the result of our field work, *S. breviceps* Fennah, 1987 was collected in Burma (Fennah 1987) (Fig. 35), seven described species within the genus *Symplanella* are distributed in southern China (Chou et al. 1994; Zhang and Wang 2009; Yang and Chen 2014) (Fig. 35). The members of the genus *Symplanella* seem to be restricted to the Oriental region.

Host plant. Our field survey showed that two new species of *Symplanella* from Southwest China occurring on bamboo (*Neosinocalamus* sp.). According to Yang and Chen (2014), *S. recurvata* was also collected on *Neosinocalamus* sp., and *S. hainanensis* and *S. zhongtua* were collected on bamboo, unfortunately, no more specific information about bamboo species for other species of *Symplanella*. Therefore, we infer that the host plant of the genus *Symplanella* is bamboo.

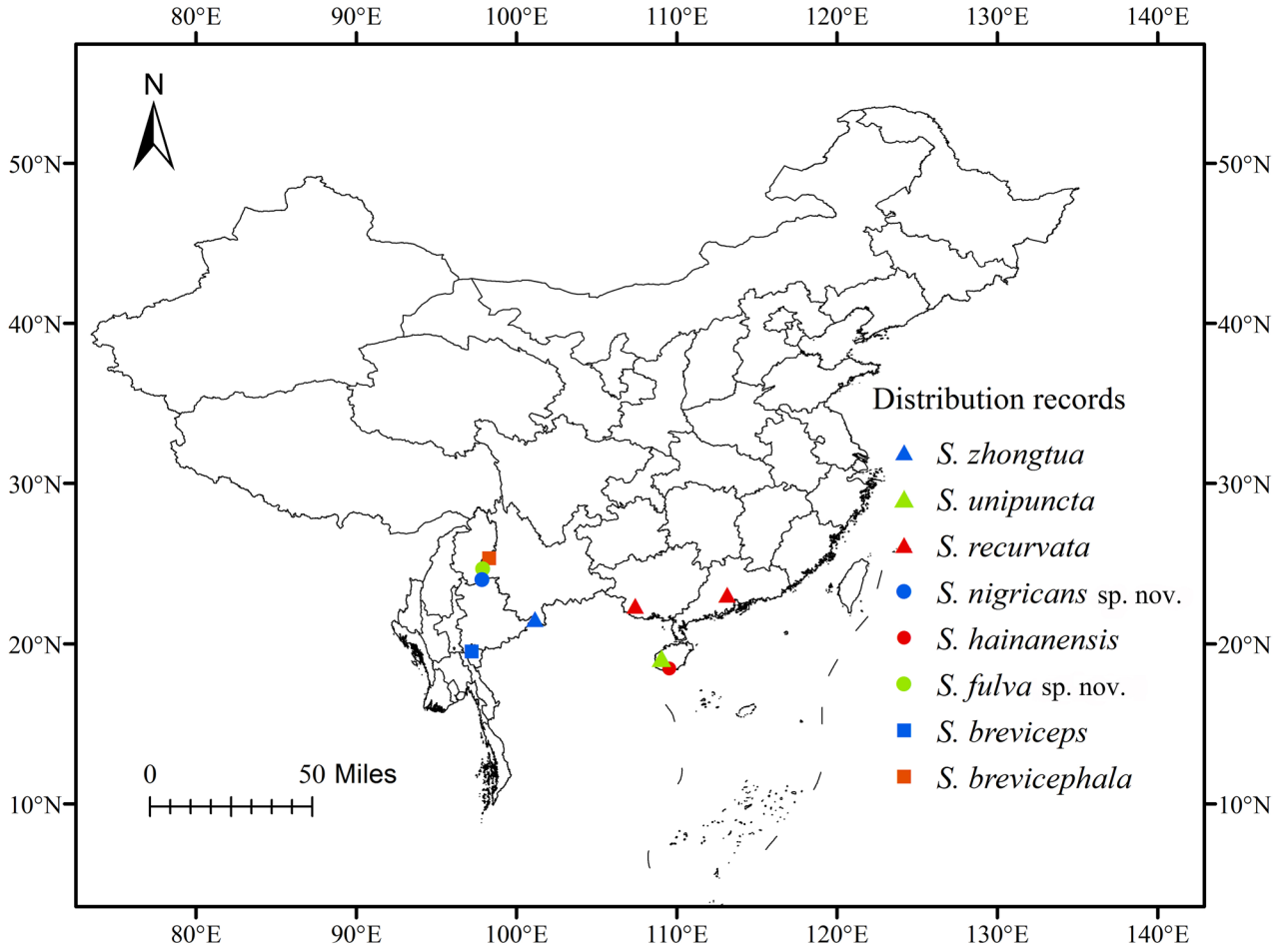


FIGURE 35. Geographic distributions of *Symplanella* species.

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