



Three new species of the genus *Ricanula* Melichar, 1898 (Hemiptera: Fulgoromorpha: Ricaniidae) from China

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Abstract

Three new species of the genus *Ricanula* Melichar, 1898: *R. unica* sp. nov., *R. fujianensis* sp. nov. and *R. hainanensis* sp. nov. are described from south China. An identification key to *Ricanula* species in Chinese fauna is provided. Photographs of the adults and illustrations of genital structures of the new species are also given.

Key words: Fulgoroidea, planthopper, taxonomy, key, Oriental Region

Introduction

The genus *Ricanula* Melichar, 1898 was formerly established as a subgenus of *Ricania* Germar, 1818. It was raised at a generic level by Schmidt (1912) who designated *Ricania noualhierii* Melichar, 1898 as the type species. This genus *Ricanula* is one of the largest within family Ricaniidae, comprising 31 species and 2 subspecies so far (Bourgoin 2016), and widely distributed in the southeastern Palaearctic, Oriental and Australian Regions.

Only one *Ricanula* species, *R. pulverosa* (Stål, 1965), originally described from Cambodia, is known to occur in China. Yang (1989) reported *Ricanula sublimata* (Jacobi, 1916) from Taiwan but it's a wrongly assigned species. In fact it belongs to *Ricania*.

With the description of the following three new species from south China, two keys are provided in order to identify the four Chinese *Ricanula* species. The choice of the key is linked to the sex of the specimen to be identified.

Material and methods

Dry pinned and 100% alcohol preserved specimens were used for this study.

The morphological terminology used in the paper follows Bourgoin & Huang (1990), Bourgoin (1993) and Bourgoin *et al.* (2015).

Preparation of *R. unica* sp. nov. and *R. fujianensis* sp. nov. The male and female abdomens were boiled in 10% NaOH for about 5 minutes and placed in glycerol jelly for the observation with a stereoscopic microscope (LEICA MZ-12.5). An ocular micrometer was used for measuring some characters. Photos were taken using a Scientific Digital micrography system equipped with an Auto-montage imaging system and a QIMAGING Retiga 4000R digital camera (CCD). Multiple photographs were compressed by means of the Photoshop software. All measurements are given in millimeters (mm).

Preparation of *R. hainanensis* sp. nov. The abdomen of the specimen examined was cut off and cleared for 30 min in a warm (50°C) 10% KOH solution with a few drops of black chlorazol (CAS No. 1937-37-7) for dyeing the ectodermic genital structures, based on the method introduced by Carayon (1969). Dissections and cleaning of

the genital structures were carried out in distilled water. Final observations were made in glycerol using a Olympus stereoscopic (SZH10). The photographs of the habitus and internal structures were taken using a stereoscopic microscope Leica MZ 16 with IC3D camera; final images were created using the Helicon 5.0 software and Adobe Photoshop.

Specimens described as *R. unica* **sp. nov.** and *R. fujianensis* **sp. nov.**, in this study were collected by the first author and graduate students and now all are preserved in the Entomological Museum, Northwest A&F University (NWAUFU). The type of *R. hainanensis* **sp. nov.** is deposited in Museum and Institute of Zoology PAS, Warsaw (MIZ).

Taxonomy

Genus *Ricanula* Melichar, 1898

Ricania (*Ricanula*) Melichar, 1898: 218.

Ricanula Schmidt, 1912: 75.

Type species. *Ricania noualhierii* Melichar, 1898, designated by Schmidt (1912).

Key to species of *Ricanula* (males) from China excluding *R. hainanensis* (male unknown)

1. Postero-ventral angle of anal tube elongate and sharp (Fig. 7), perianthrium elongate and narrow dorso-ventrally 2
- Postero-ventral angle of anal tube widely rounded (Fig. 24), perianthrium short and wide (Fig. 31) *R. fujianensis* **sp. nov.**
2. Postero-dorsal angle of pygofer with lobe (Fig. 7), apical processes of aedeagus single *R. unica* **sp. nov.**
- Postero-dorsal angle of pygofer without lobe (rounded), apical processes of aedeagus with 2 pairs of apical processes
 *R. pulverosa* (Stål)

Key to species of *Ricanula* (females) from China

1. Pregenital sternite with posterior margin almost straight, medially slightly incised (Fig. 17) *R. unica* **sp. nov.**
- Pregenital sternite with posterior margin convex medially
2. Median portion of the posterior margin with strong process (Fig. 41) *R. hainanensis* **sp. nov.**
- Median portion of the posterior margin without single strong process 3
3. Median portion of posterior margin with bilobate process *R. pulverosa* (Stål)
- Median portion of posterior margin without process (Fig. 34) *R. fujianensis* **sp. nov.**

Ricanula unica **sp. nov.**

(Figs 1–17)

Etymology. The name is derived from the Latin word “unicus” (single), referring to only one pair of apical processes of the aedeagus.

Diagnosis. *Ricanula unica* **sp. nov.** is similar to *Ricanula pulverosa* (Stål), but differs from the latter in having only one pair of apical spinose processes of aedeagus (with two pairs of apical spinose processes of aedeagus in *R. pulverosa*).

Description. Length (inclu. teg.): male 9.3–10.5 mm, female 9.7–11.3 mm.

Head. Head with compound eyes (in dorsal view) a little narrower than the widest part of mesonotum (Fig. 3). Vertex short, 7.3 times wider at the anterior margin than long in midline, anterior and posterior margins arcuate, posterior margin arcuate more than anterior margin; disc of vertex without median carina, from anterior to posterior margins downward sloped (Fig. 3).

Frons at upper margin as wide as high in midline, 1.29 times wider at widest part (about the level of lower margin of compound eyes) than long in midline; upper margin slightly convex, lateral margins arcuate, not incised near ocelli, in lower part slightly curved to frontoclypeal suture; frontal disc with 3 carinae separated basally, lateral carinae arcuate, almost parallel to lateral margins and finishing basally at the same level than the median

carina, reaching the level of antennae (Fig. 4); frons not in the same plane, the apical part below the level of antenna strongly sloped downward, oriented postero-ventral (Fig. 4).

Compound eyes oval, with callus at lower margin (Figs 1–4). Pedicel elongate, barrel-shaped (Fig. 2). Ocelli present (Figs 2, 4).

Frontoclypeal suture arcuate (Fig. 4). Clypeus ecarinate, distinctly narrower than frons, disc with median portion convex longitudinally (Fig. 4).

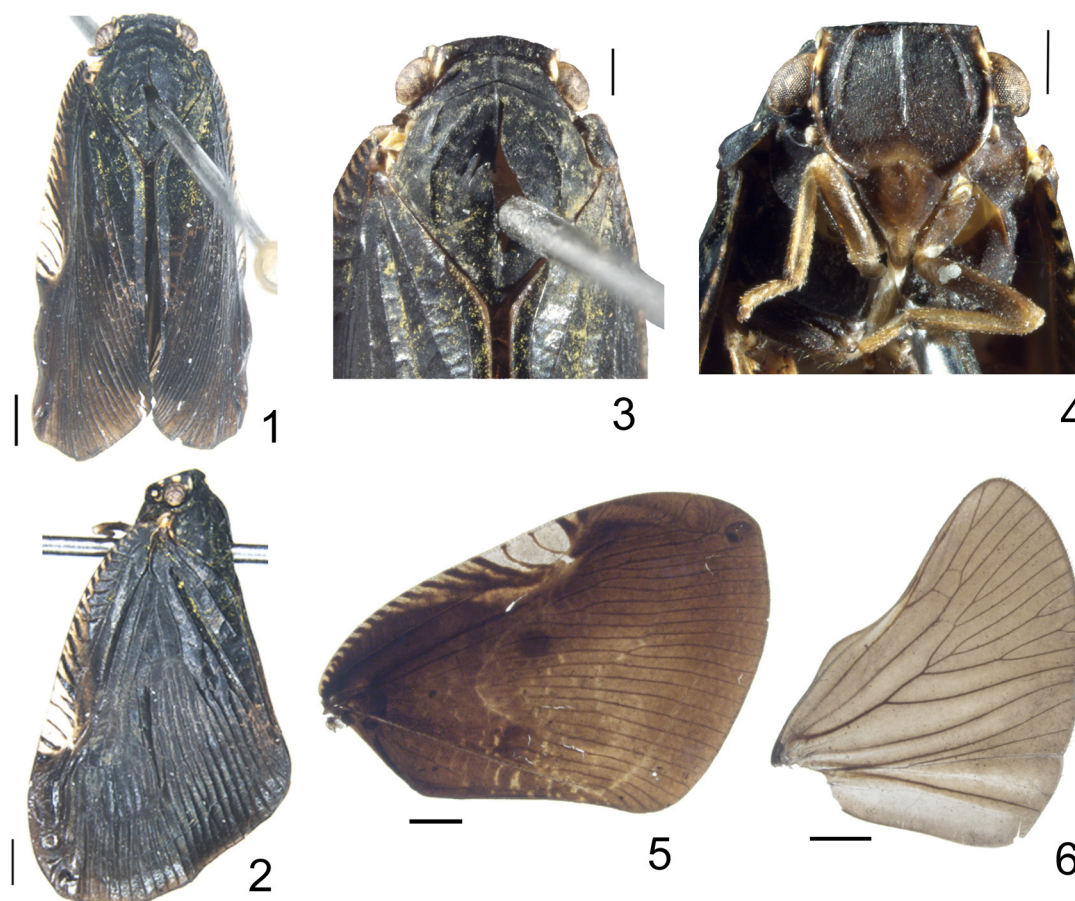
Rostrum reaching mesotrochanters, apical segment distinctly shorter than subapical.

Thorax. Pronotum distinctly longer in midline than vertex; anterior and posterior margins arcuate, almost parallel in median portion (Fig. 3).

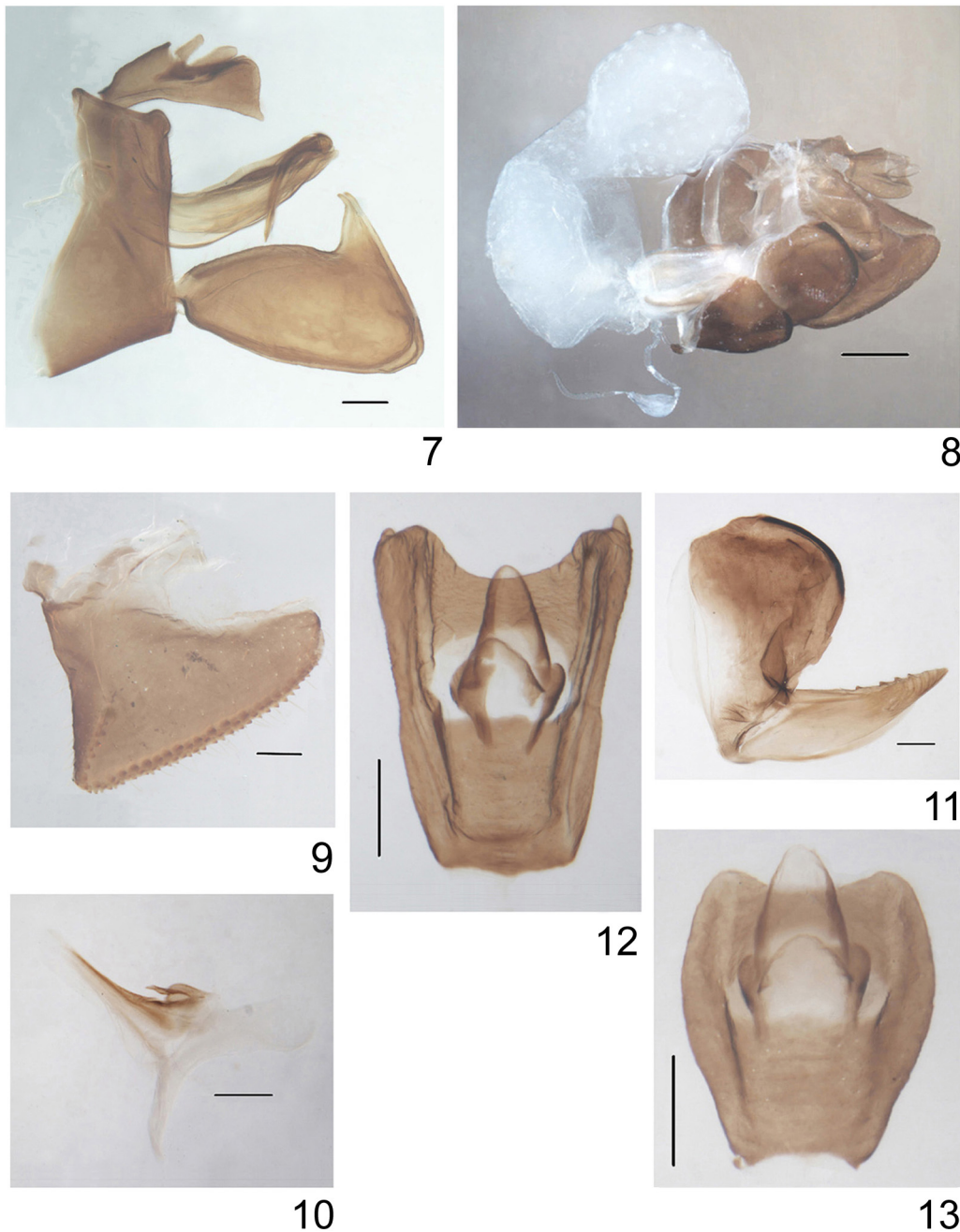
Mesonotum elongate, distinctly longer than cumulative length of vertex and pronotum in midline; median carina keel-shaped, almost reaching scutellum; lateral carinae not connecting with anterior margin, almost reaching posterior margins; anterolateral carinae connected with anterior margin, not connected with lateral carinae (Fig. 3).

Tegmina (Figs 1, 2, 5) membranous, elongately-triangular; costal margin weakly arcuate, apical angle broadly rounded, placed distad to claval angle, posterior margin arcuate. Costal area of tegmina with sparse transverse veinlets, a little wider than postcostal cell and widened apically, postcostal cell narrower than costal area, without transverse veinlets; basal cell small, widely rounded; veins ScP+R, MP_{1+2} , MP_{3+4} and CuA leaving basal cell separated. ScP+R vein forked just after leaving basal cell, CuA forked before middle of clavus. Tegmen without lines of transverse veinlets. Cubital cell with transverse veinlets, *icu* veinlets present. Claval veins Pcu and A_1 fused about midlength of clavus. Transverse veinlets present in the median portion of tegmen closing inner margin.

Wings small, costal area present, small; postcostal cell distinctly longer than wide, and 2 transverse veinlets *r-m* and *m-cu* present (Fig. 6).



FIGURES 1–6. *Ricanula unica* sp. nov., male. (1) habitus, dorsal view; (2) same, lateral view; (3) anterior part of body, dorsal side; (4) frons and clypeus, frontal view; (5) tegmen, dorsal view; (6) wing, dorsal view. Scale bars = 1 mm (Figs 1, 2, 5, 6); 0.50 mm (Figs 3–4).



FIGURES 7–13. *Ricanula unica* sp. nov. (7) male terminalia, lateral view; (8) female terminalia and bursa copulatrix and spermatheca, lateral view; (9) gonoploc, lateral view; (10) gonapophysis IX and gonospiculum bridge, lateral view; (11) gonopophysis VIII and endogonocoxal process, lateral view; (12) male anal tube, dorsal view; (13) female anal tube, dorsal view. Scale bars = 0.50 mm (Fig. 8); 0.20 mm (Figs 7, 9–13).

Pro- and mesofemora as long as pro- and mesotibia tibiae, both square in cross section; metafemur square, shorter than metatibiae. Metatibia with 2 lateral spines and 6 apical teeth; basitarsomere a little longer than cumulative length of second and hind tarsomere, with 5–7 apical teeth. Metatibiotarsal formula 2/6/5–7.

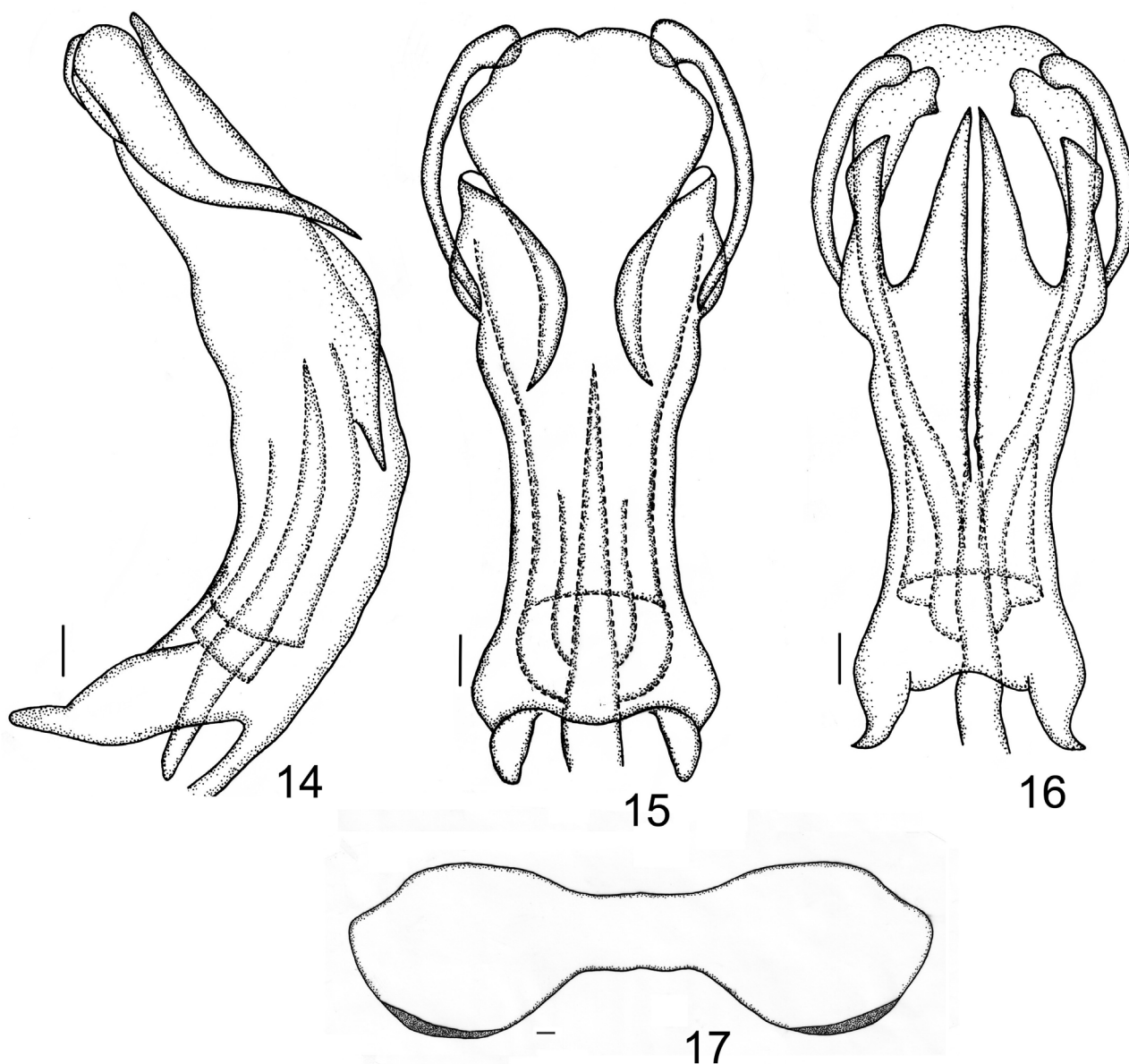
Coloration. General color of body dark brown to dark (Figs 1–2). Lateral margins of vertex creamy (Fig. 3); apical margin of frons near frontoclypeal suture with brown yellowish band, median portion of clypeus and rostrum brown (Fig. 4). Eyes sordid brown, ornamented with irregular black patches (Figs 3–4). Gena light brown with three pale yellowish spot. Tegmina piceous-brown, costal margin with about 14 transverse black stripes from base to a little beyond middle, between the transverse black stripes filled with greyish-white stripes, near middle a large pale flavescent or greyish-white spot marked by two central transverse back lines, disc of tegmina near posterior

margin with pale yellowish transverse veinlets (Fig. 5). Wings brown, each side of A_2 with a grayish narrowed band longitudinally (Fig. 6). Pro- and mesofemora brown, both tibiae brown yellowish. Metafemora and metatibiae brown yellowish. Abdomen dark brown.

Male terminalia. Anal tube elongate; basal margin, in dorsal view, about twice shorter than posterior margin, posterior margin strongly concave, basal margin slightly convex, lateral margins straight, anus placed a bit after midlength, paraproct surpassing the posterior margin (Fig. 12). Anal tube, in lateral view, strongly extending the end of the pygofer, ventral margin slightly concave (Fig. 7).

Pygofer in lateral view higher than wide; dorsally narrower than ventrally, posterior margin almost straight, posterior-dorsal angle with process, caudodorsal angle angulate (Fig. 7).

Genital styles, in lateral view, obviously longer than wide and bearing spine-like process at the end of dorsal margin; both lower and upper margins convex; ventral margin in caudo-dorsal angle widely rounded and surpassing the posterior margin of process, hind margin straight (Fig. 7).



FIGURES 14–17. *Ricanula unica* sp. nov. (14) phallic complex, left view; (15) same, ventral view; (16) same, dorsal view; (17) pregenital sternite (female), flattened. Scale bars = 0.10 mm (Figs 14–17).

Phallic complex. Phallic complex slender, arcuate in lateral view (Figs 7, 14). In apical part, periandrium shorter than aedeagus, upper margin of dorsal periandrium “w” shaped with split in middle line, surpassing the half

length of periandrium; lateral margin of dorsal periandrium, in ventral view, bending ventral and slightly inside-out forming two small crescented lobes. Basal part of periandrium without any additional structures, dorsal periandrium shorter than the ventral one, middle part of upper margin of ventral periandrium slightly concave (Figs 14–16).

Aedeagus longer than periandrium, with pair of well sclerotized, smooth and spinose processes; each process with a single apex; processes bending from dorsal to ventral side, about one third of phallic complex, oriented ventrally (Figs 14–16).

Female terminalia. Pregenital sternite with lateral lobes well developed, median portion distinctly narrower than lateral lobes; anterior margin weakly convex medially; posterior margin almost straight with middle portion slightly incised (Fig. 17).

Anal tube in lateral view elongate, reaching a half of the upper margin of gonoplac, ventral margin convex (Fig. 8).

Anal tube, in dorsal view, 1.87 times longer in midline than wide at the widest part, the widest near median portion, lateral margins convex, basal margin slightly concave, posterior margin arcuate, anus placed after midlength, paraproct distinctly surpassing the posterior margin of anal tube (Fig. 13).

Gonoplac with posterior margin bearing 2–3 well visible rows of blunt and short teeth; posterior ventral part partly membranous (Fig. 9).

Gonapophysis VIII partly laterally flattened, tapering apicad, dorsal margin slightly concave with sharp apex and well visible teeth at the posterior-dorsal margin, with spiniferous microsculpture near apex; endogonocoxal process narrower and shorter than gonapophysis VIII, smooth (Fig. 11).

Gonapophysis IX as in Fig 10, ventral portion membranous, dorsal portion sclerotized; gonospiculum bridge flatted caudo-dorsally, needle-like ventro-dorsally.

Bursa copulatrix with two widely connected white, circular and partly wrinkled pouches; the first pouch with well visible cells and sclerotized ornamentation, the second one without cells but with well visible numerous surface pores (Fig. 8).

Spermatheca well developed; *ductus receptaculi* wrinkled, longer than *diverticulum ductus*.

Type materials. **Holotype**, male: [China: Guangxi, Guilin, Huaping National Nature Reserve, 1000 m, coll. Yinfeng Meng, 26 Jul. 2014]. **Paratypes**: 1♂ and 3♀♀, same data as holotype; 4♂♂ and 6♀♀: [China: Guangxi, Langping, Cenwanglao mountain, coll. Yinfeng Meng and Ye Xu, 11 Aug. 2014]; 4♂♂ and 12♀♀: [China: Guangxi, Guilin, Huaping National Nature Reserve, coll. Lanlan Ren, 18 Jul. 2015]; 9♂♂ and 18♀♀: [China: Guizhou, Duyun, Dongpeng mountain, coll. Lanlan Ren, 3 Jul. 2015].

Distribution. China (Guangxi, Guizhou).

***Ricanula fujianensis* sp. nov.**

(Figs 18–34)

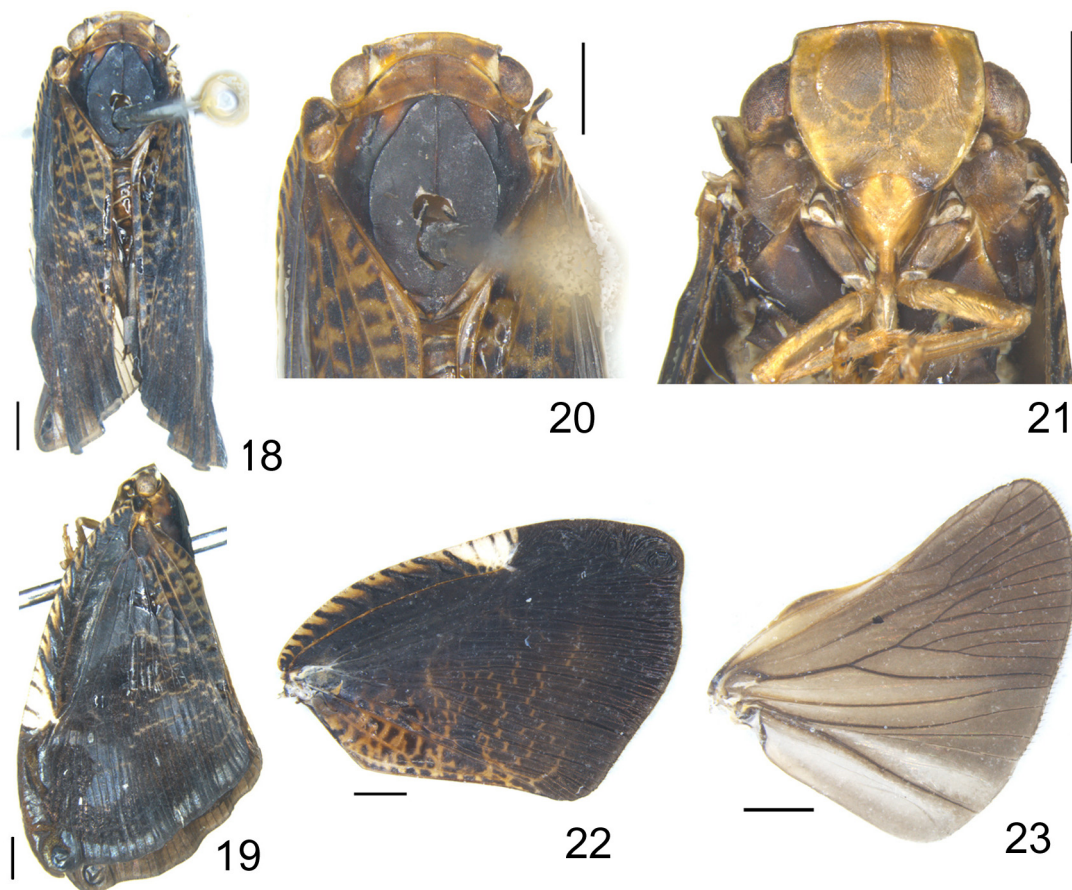
Etymology. The species name is derived from the type locality, Fujian Province.

Diagnosis. *Ricanula fujianensis* sp. nov. is similar to *R. pulverosa* (Stål), but differs from the latter in having numerous yellowish transverse veinlets in inner half of tegmina (with few transverse veinlets on basal portion in *R. pulverosa*); ventral periandrium of the new species bearing a pair of processes (ear-like structure with almost transparent bar-like process beyond it), bending dorsal and oriented to phallic complex (ventral periandrium without processes in *R. pulverosa*); apical spinose processes of aedeagus long, surpassing half length of the phallic complex (apical spinose processes short, not reaching half length of the phallic complex in *R. pulverosa*).

Description. Length (inclu. teg.): male 8.7–9.8 mm, female 9.3–10.8 mm.

Head. Head with compound eyes nearly as wide as the widest part of mesonotum (Fig. 20). Vertex narrower than pronotum, about 6.0 times wider at the anterior margin than long in midline, all margins well carinate, posterior margin arcuate more strongly than anterior margin; disc of vertex without median carina, from anterior to posterior margins downwardly sloped (Fig. 20).

Frons 1.31 times wider at widest part (about the level of lower margin of ocelli), than long in midline, a little longer at upper margin than high in midline; upper margin slightly arcuate, lateral margins arcuate, in lower part curved to frontoclypeal suture; frontal disc with 3 carinae separated basally, lateral carinae arcuate, reaching the level of the midlength of the median carina (Fig. 21); frons oriented postero-ventral (Fig. 19).



FIGURES 18–23. *Ricanula fujianensis* sp. nov., male. (18) habitus, dorsal view; (19) same, lateral view; (20) anterior part of body, dorsal view; (21) frons and clypeus, frontal view; (22) tegmen, dorsal view; (23) wing, dorsal view. Scale bars = 1 mm (Figs 18–23).

Frontoclypeal suture arcuate (Fig. 21). Clypeus ecarinate, triangular, not in the same plane than frons and distinctly narrower, median portion convex (Fig. 21).

Compound eyes oval, with callus at lower margin (Figs 18–21). Ocelli present (Figs 19, 21).

Rostrum reaching mesotrochanters, apical segment shorter than subapical.

Thorax. Pronotum distinctly longer in midline than vertex; disc of pronotum with median carina, anterior and posterior margins arcuate, in median portion almost parallel (Fig. 20).

Mesonotum about 4.2 times longer than cumulative length of vertex and pronotum in midline; median carina keel-shaped, almost reaching scutellum; lateral carinae not connected basally, almost reaching posterior margins; anterolateral carinae not fused with lateral carinae, not surpassing the lateral angles of mesonotum (Fig. 20).

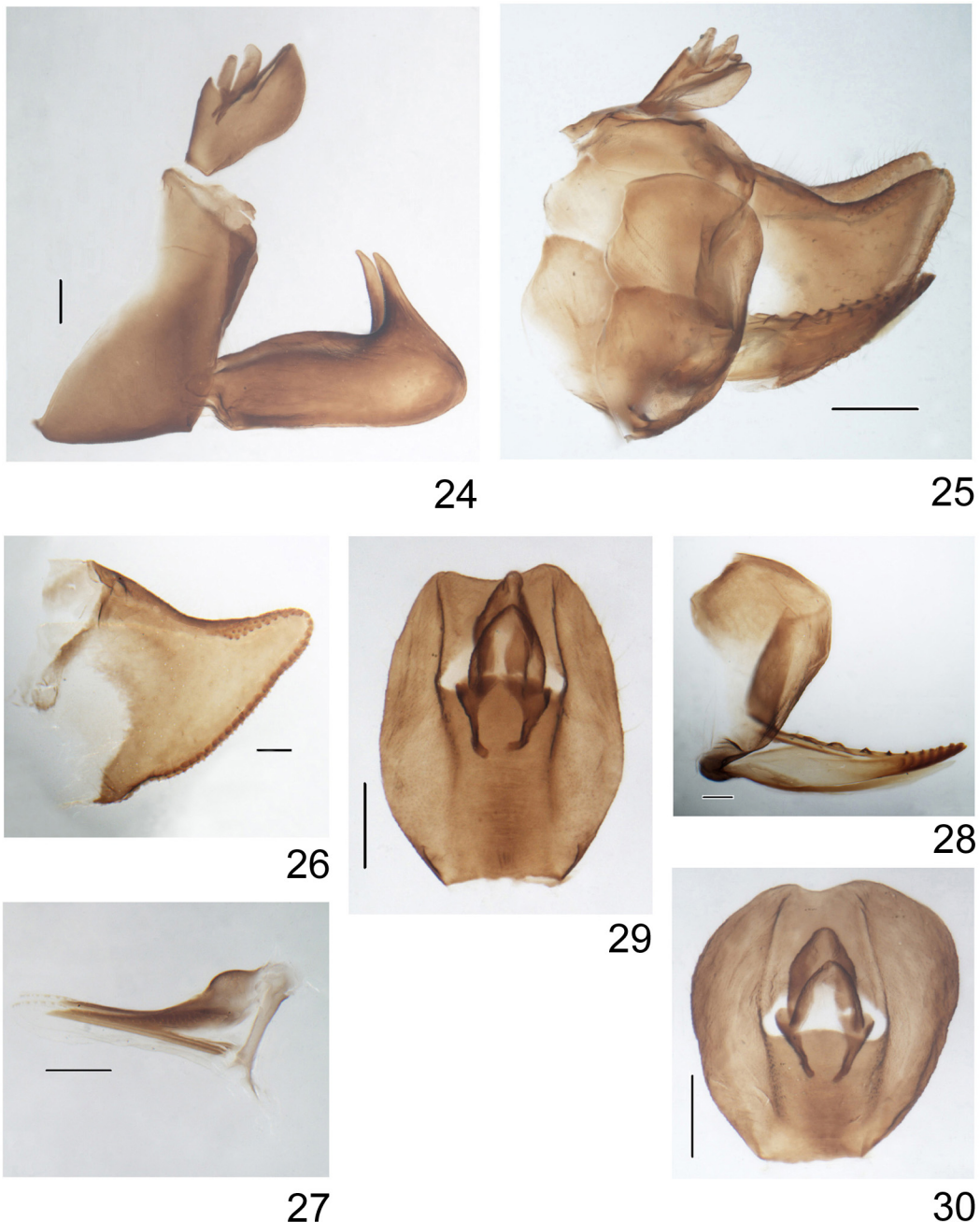
Tegmina (Figs 18–19, 22) membranous, elongately-triangular; costal margin weakly arcuate, slightly incised near apical angle, anterior angle broadly rounded, placed distad to claval angle, posterior margin almost straight. Costal area with sparse transverse veinlets, a little wider than postcostal cell and a little widened apically, postcostal cell without transverse veinlets; basal cell small, widely rounded; veins ScP+R, MP and CuA leaving basal cell separated. ScP+R vein forked just after leaving basal cell, MP dividing into MP₁₊₂ and MP₃₊₄ basally, CuA forked before middle of clavus. Claval veins Pcu and A₁ fused about midlength of clavus. Tegmen without lines of transverse veinlets, in inner half with numerous irregular transverse veinlets.

Wings small, costal area present and small; postcostal cell distinctly longer than wide, 2 transverse veinlets *r-m* and *m-cu* present (Fig. 22).

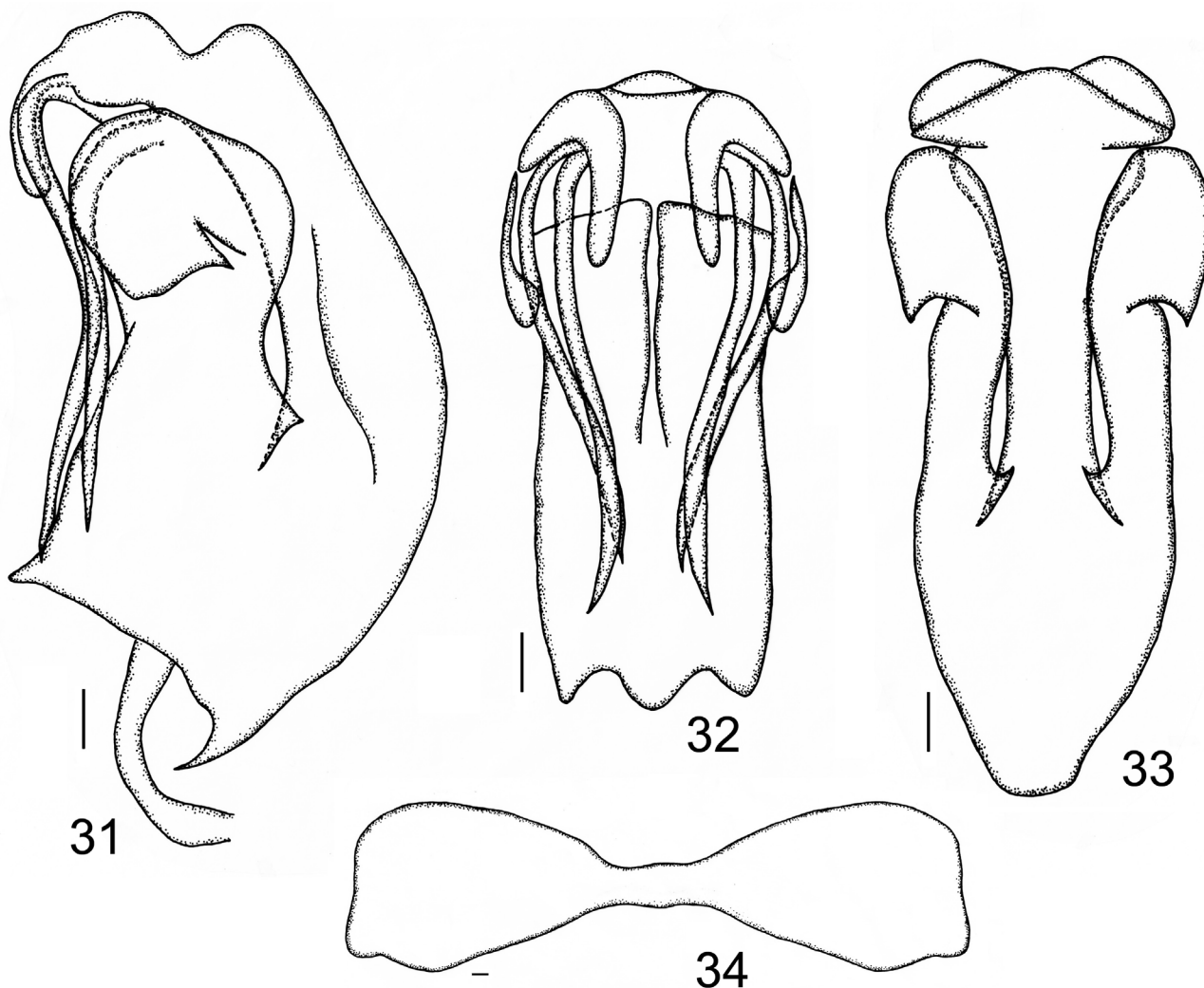
Pro- and mesofemora as long as pro- and mesotibia, both square in cross section; metafemur square, shorter than metatibiae, metatibiae partly flattened, with 2 lateral spines and 6 apical teeth; basitarsomere with 6–8 apical teeth, a little longer than cumulative length of second and hind tarsomere. Metatibiotarsal formula 2/6/6–8.

Coloration. General color of body dark brown to dark (Figs 18–19). Vertex with 2 brown reddish stains at each

posterolateral corner, lateral margins pale yellow (Fig. 20). Pronotum brown (Fig. 20). Mesonotum dark brown, sometimes with 2 brown reddish spots anterolaterally (Fig. 20). Frons brown, clypeus and rostrum brownish (Fig. 21). Eyes sordid brown, ornamented with irregular black patches (Figs 18–21). Ocelli red. Gena light brown with three pale white spots. Tegmina piceous-brown, costal margin with about 10 transverse black stripes from base to a little beyond middle, between the stripes filled with greyish-white patches, submedially with a large pale flavescent or greyish-white spot marked by two central transverse black lines, the inner half of tegmina filled with numerous pale yellowish transverse veinlets (Figs 19, 22). Wings brown, A₂ ornamented with longitudinal grayish band on both sides (Fig. 23). Pro-, mesofemora and tibiae brown. Metafemora and metatibiae brown yellowish. Abdomen dark brown.



FIGURES 24–30. *Ricanula fujianensis* sp. nov. (24) male terminalia (without aedeagus), lateral view; (25) female terminalia, lateral view; (26) gonoploc, lateral view; (27) gonapophysis IX and gonospiculum bridge, lateral view; (28) gonopophysys VIII and endogonocoxal process, lateral view; (29) female anal tube, dorsal view; (30) male anal tube, dorsal view. Scale bars = 0.50 mm (Fig. 25); 0.20 mm (Figs 24, 26–30).



FIGURES 31–34. *Ricanula fujianensis* sp. nov. (31) phallic complex, lateral view; (32) same, dorsal view; (33) same, ventral view; (34) pregenital sternite (female), flattened. Scale bars = 0.10 mm (Figs 31–34).

Male terminalia. Anal tube, in dorsal margin, with basal margin, shorter than posterior margin, posterior margin concave, basal margin straight, lateral margins arcuate, anus placed in middle, paraproct not surpassing the posterior margin (Fig. 30). Anal tube, in lateral view, far surpassing the end of pygofer; ventral margin convex (Fig. 24).

Pygofer, in lateral view, higher than wide; dorsally narrower than ventrally, posterior margin almost straight; posterior-dorsal angle without process, caudo-dorsal angle not angulate (Fig. 24).

Genital styles in lateral view obviously longer than wide, with a spine-like process at the end of dorsal margin; upper margin convex, lower margin mostly straight; ventral margin in caudo-dorsal angle widely rounded and surpassing the posterior margin of process (Fig. 24).

Phallic complex. Phallic complex, in lateral view, broad and short, bent at middle; periandrium with lateral split longer than half of its length, lateral lobes present; periandrium, in dorsal view, longer than aedeagus, upper margin of dorsal periandrium divided in middle, lateral lobes slightly bent inside; in ventral view the upper of ventral margin with 2 ear-shaped lobes, the apical lobe bearing bar-shaped transparent process (in lateral and dorsal views), basal part of periandrium without any additional structures; dorsal periandrium shorter than ventral (Figs 31–33).

Aedeagus shorter than periandrium, with 2 pairs of well sclerotized, smooth and spinose processes in lateral view, each process with a single apex, apical process longer than subapical one. Processes long, a little shorter than periandrium, both oriented basad (Figs 31–33).

Female terminalia. Pregenital sternite with lateral lobes well developed, median portion strongly narrow;

anterior margin weakly concave medially; posterior margin straight with slightly convex median portion (Fig. 34).

Anal tube in lateral view short, ventral margin convex (Fig. 25).

Anal tube in dorsal view, 1.3 times longer in midline than wide at widest part (widest submedially), lateral margins convex, basal margin slightly concave, posterior margin concave, anus placed after midlength, paraproct surpassing the posterior margin of anal tube (Fig. 29).

Gonoplac: posterior margin bearing 2 well visible rows of blunt and short teeth (the upper margin 2-3 melt rows), posterior ventral part partly membranous (Fig. 26).

Gonapophysis VIII partly flattened laterally, tapering apicad; dorsal margin slightly concave, with sharp apex and well visible teeth at posterodorsal margin, near apex with spiniferous microsculpture; endogonocoxal process narrower and shorter than gonapophysis VIII, smooth (Fig. 28).

Gonapophysis IX with posterior connective lamina sclerotized, gonospiculum bridge finger-like caudo-dorsally, needle-like ventro-dorsally (Fig. 26).

Type material. Holotype, 1♂: [China: Fujian, Wuyi mountain, Tongmucun, 850 m, coll. Manqiang Wang and Bin Xiao, 16 Aug. 2008].

Paratypes: 6♂♂ and 5♀♀, same data as holotype; 9♂♂ and 10♀♀: [Fujian, Sanming, Longxi mountain, 725 m, col. Fengjuan Ren, 2 Aug. 2013].

Distribution. China: Fujian Province.

***Ricanula hainanensis* sp. nov.**

(Figs 35–49)

Etymology. The species was named after Hainan Island (South China)—the type locality.

Description. Length (female, inc. teg.): 9.7 mm.

Head. Head with compound eyes (in dorsal view, Figs 35, 38) about as wide as widest part of mesonotum. Vertex (Figs. 35, 38) 7 times wider in the anterior margin than long in midline, anterior and posterior margins arcuate, posterior margin with larger curvature than anterior one.

Frons (Fig. 37) wider than long in midline, 1.17 times wider at upper margin than long in midline and in widest part, below ocelli level 1.31 times; upper margin straight, lateral margins arcuate, elevated and without lateral incisions; disc of frons tricarinate, carinae separated at base; median carina extending half of length in midline, lateral carinae arcuate, partly parallel to lateral margins, finishing a little before the median one. Frontoclypeal suture distinctly arcuate. Clypeus distinctly narrower than frons, without carinae, median part convex.

Compound eyes (Fig. 36) oval in lateral view, with small callus at posteroventral margin. Ocelli present.

Rostrum reaching mesotrochanters, apical segment shorter than subapical.

Thorax. Pronotum (Figs 35, 38) 2.16 times longer in midline than vertex; disc of pronotum with median carina and 2 lateral incisions; anterior margin arcuate, posterior margin with strongly curvature than anterior one.

Mesonotum (Figs 35, 38) 1.12 times longer than wide between lateral angles and about 3.95 times longer than cumulative length of vertex and pronotum in midline; disc of mesonotum with median and lateral keel-shape carinae, connected at base, lateral carinae reaching almost posterior margin; anterolateral carinae present, short, not connected with lateral, almost parallel to lateral ones not surpassing the lateral angles of mesonotum.

Tegmina (Figs 35–36, 39) membranous, elongately-triangular; costal margin weakly arcuate, anterior angle rounded, placed distad to claval angle, apical margin irregular.

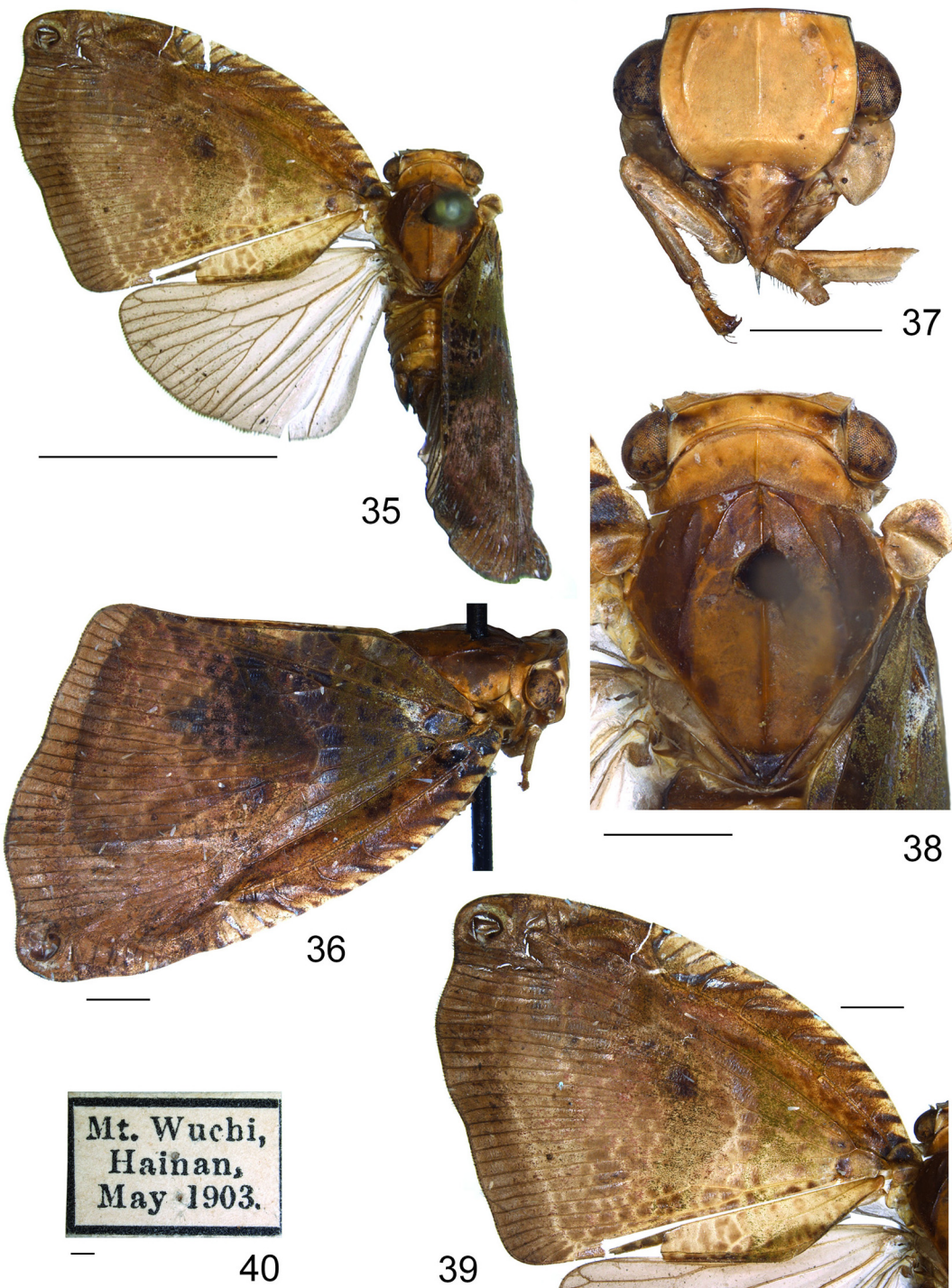
Costal area with sparse and curved transverse veinlets, wider than postcostal cell and wider apically, ending before apex of clavus; postcostal cell without transverse veinlets; basal cell elongate and wide; longitudinal veins ScP+RA, MP and CuA leaving basal cell separately; ScP+R veins and MP forked immediately after leaving basal cell, CuA forked before of connection of Pcu and A₁. Claval veins Pcu and A₁ fused after middle of clavus with transverse veinlets present between CuP and Pcu, CuP and Pcu+A₁ and between Pcu and A₁.

Tegmina with sparse transverse veinlets in median and posterior parts, veinlets below MP₃₊₄ vein more dense, apical line of transverse veinlets present, apical cells distinctly longer than wide.

Wings with elongate and narrow precostal cell; 2 transverse veinlets r-m and m-cu present (Fig. 35).

Profemora about as long as tibiae, profemur partly laterally flattened more V shape in cross section, tibiae square in cross section; mesotibiae longer than mesofemora, femora laterally flattened, rectangular in cross section,

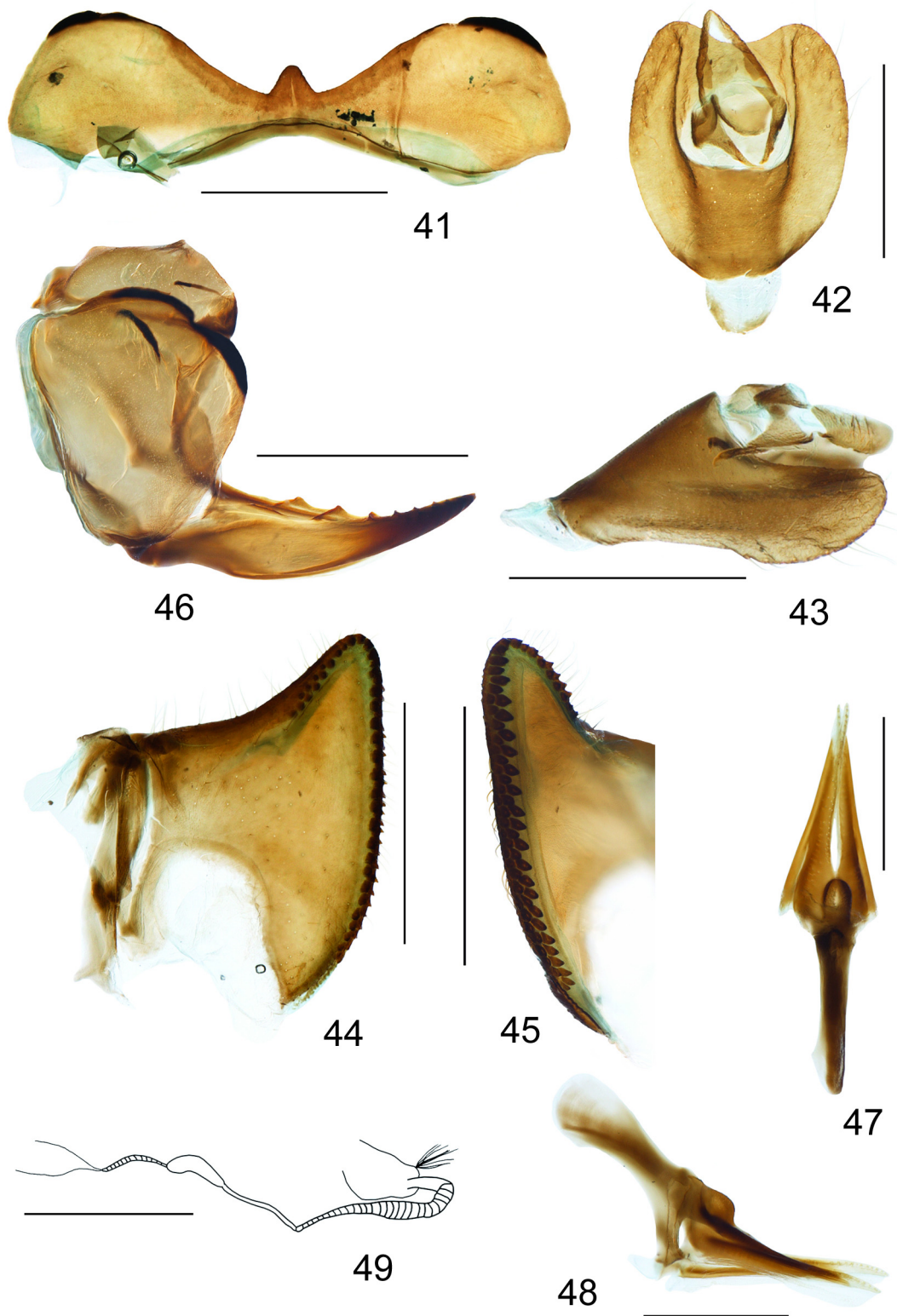
tibiae square in cross section; metafemur shorter than metatibiae, curved, metatibiae partly flattened apically, with 2 lateral spines and 6 apical teeth; basitarsomere with 6 apical teeth, about as long than cumulative length of second and hind tarsomere. Metatibiotarsal formula 2/6/6.



FIGURES 35–40. *Ricanula hainanensis* sp. nov., holotype, female. (35) habitus, dorsal view; (36) same, lateral view; (37) head, frontal view; (38) anterior part of body, dorsal view; (39) tegmen, dorsal view; (40) label. Scale bars = 5 mm (Fig. 35); 1 mm (Figs 36–39).

Coloration. Vertex yellow with 2 brown patches near the antero-lateral part and with 3 small light brown dots along anterior margin. Frons yellow, lateral part of head yellowish with 3 small brown patches at upper part, lower part brownish. Clypeus brownish with median yellow strip. Pronotum yellow. Median portion of mesonotum between lateral margins yellowish, lateral parts brown, scutellum dark brown. Tegmina piceous-brown with

yellowish transverse veinlets below MP_{3+4} and on the clavus, costal margin with oblique dark brown stripes and yellow patches between; basal cell with dark brown patch near posterior margin; median portion of tegmen with rounded brown patch, postero-apical part with eyes-spot black cell. Wings and legs brownish. Abdomen light brown, basal sternites yellow.



FIGURES 41–49. *Ricanula hainanensis* sp. nov., holotype, female. (41) pregenital sternite, flattened; (42) anal tube, dorsal view; (43) same, lateral view; (44) gonoplac, external lateral view; (45) posterior margin of the gonoplac, internal view; (46) gonopophysys VIII and endogonocoxal process, lateral view; (47) gonapophysys IX and gonospiculum bridge, dorsal view; (48) same, lateral view; (49) spermatheca. Scale bars = 1 mm (Figs 41, 44–46, 49); 0.50 mm (Figs 42, 43, 47, 48).

Male. Unknown.

Female terminalia. Pregenital sternite (Fig. 41) with well developed, elongately-rounded and distinctly separated lateral lobes; anterior margin weakly concave, posterior margin medially with strong triangular and elongate process.

Anal tube (in lateral view, Fig. 43) elongate, not surpassing posterior margin of the gonoplac; basal part narrower than posterior one; ventral margin arcuate, ventroposterior angle widely rounded; anus placed dorsally about midlength.

Anal tube, in dorsal view (Fig. 42), rounded; with basal part distinctly narrower than posterior one, basal margin rounded, posterior margin widely concave medially; lateral margins arcuate; anus placed a bit before midlength.

Gonoplac: laterally flattened, in lateral view (Fig. 44) with posterior part wider than at base, posterior margin with 2 rows of teeth (Fig. 45); membranous part of gonoplac well developed, placed medially on ventral margin.

Gonapophysis VIII (Fig. 46) sabre-like, “v” shape in cross section, with 11 teeth at dorsal margin; endogonocoxal process with spiniferous microsculpture, well sclerotized medially, lateral parts membranous, tapering apicad, reaching apex of gonapophysis VIII.

Gonapophyses IX and gonospiculum bridge well developed as in Figs 47–48.

Bursa copulatrix with widely connected two pouches; wall of first pouch with well visible cells and small central sclerotized ornamentation bearing single narrow teeth with sharp and curved apex, mostly placed at lower part, second pouch membranous with very weakly visible cells and without ornamentation.

Spermatheca (Fig. 49) well developed; *ductus receptaculi* elongate and ribbed, tapering apicad; *diverticulum ductus* a bit shorter than *ductus receptaculi*, with smooth basal ductus and elongate smooth bulba at apex.

Type material. Holotype, 1 ♀, labeled (Fig. 40): [Mt. Wuchi, Hainan, May 1903].

Distribution. China: Hainan Province (Hainan Island).

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