

Revision of the leafhopper genus *Ishiharella* (Hemiptera: Cicadellidae: Typhlocybinae), with description of one new species in China

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Abstract

Four species in the leafhopper genus *Ishiharella* Dworakowska from China (Hemiptera: Cicadellidae: Typhlocybinae) are reviewed, along with a new species, *I. parudentata* **sp. nov.** from southern China (Fujian, Jiangxi and Zhejiang Provinces). *Ishiharella scitula* Qin & Zhang, 2004 is treated as a junior synonym of *I. iochoui* Dworakowska, 1982. The generic characteristics are redefined. A detailed morphological description, illustrations and photographs are provided. A key to the known species of *Ishiharella* from China, based on male anatomy, is also given.

Key Words: Hemiptera; Homoptera; Auchenorrhyncha; Empoascini; taxonomy; distribution

Resumen

Se revisan cuatro especies del género de saltahojas, *Ishiharella* Dworakowska de China (Hemiptera: Cicadellidae: Typhlocybinae), entre los cuales se describe 1 especie nueva, *I. parudentata* **sp. nov.** del sur de China (Fujian, Jiangxi y Zhejiang provincias). Se trata *Ishiharella scitula* Qin y Zhang, 2004 como un sinónimo menor de *I. iochoui* Dworakowska, 1982. Se redefinen las características del género. Se describen o re-describen las características morfológicas y la genitalia masculina de las especies conocidas de la fauna de China. Se proveen fotos del habitus, ilustraciones de la genitalia masculina y se incluye una clave para todas las especies de *Ishiharella*.

Palabras Clave: Hemiptera; Homoptera; Auchenorrhyncha; Empoascini; taxonomía; distribución

The leafhopper genus *Ishiharella* was established by Dworakowska (1970) based on the type species *Empoasca polyphemus* Matsumura, 1931 from Japan (Hokkaido, Honshu) and Russia (Caucasus). It belongs to the tribe Empoascini within the subfamily Typhlocybinae (Hemiptera: Cicadellidae) and is easily separated from other genera in this tribe by the coronal suture absent, by the paramere spirally twisted apically or bifurcated at apex and bearing a tooth basad of bifurcation, by the rudimentary connective, by the male pygofer having an additional caudoventral protrusion and by the subgenital plates fused only at their bases. It is known to occur in the Oriental and Palearctic Regions with 6 species reported to date (Matsumura 1931; Dworakowska 1982; Qin & Zhang 2004; Ohara 2010).

The Chinese *Ishiharella* were studied by Dworakowska (1982) and Qin & Zhang (2004), and comprised 4 species so far. During our recent work on the Chinese empoascine specimens deposited in the Entomological Museum, Northwest A&F University, China, one new *Ishiharella* species was found and one new junior synonym is recognized here. All known species of Chinese *Ishiharella* are described or redescribed. A revised key to all Chinese *Ishiharella* species, based on males, is also provided.

Materials and Methods

The specimens examined in this study including type material are deposited in the Entomological Museum, Northwest A&F University,

Yangling, Shaanxi, China (NWFU). Male genitalia dissections were carried out as described by Oman (1949) and Knight (1965). Line diagrams were drawn using OLYMPUS PM-10AD microscope. Photographs were taken with an automontage QIMAGING Retiga 4000R digital camera (CCD) stereozoom microscope.

Terminology follows Zhang (1990) except for the wing venation and the 4 types of setae on the subgenital plate, that follow after Dworakowska (1993) and Southern (1982) respectively.

DESCRIPTIVE TAXONOMY

Genus *Ishiharella* Dworakowska

Ishiharella Dworakowska, 1970: 716. Type species: *Empoasca polyphemus* Matsumura, 1931.

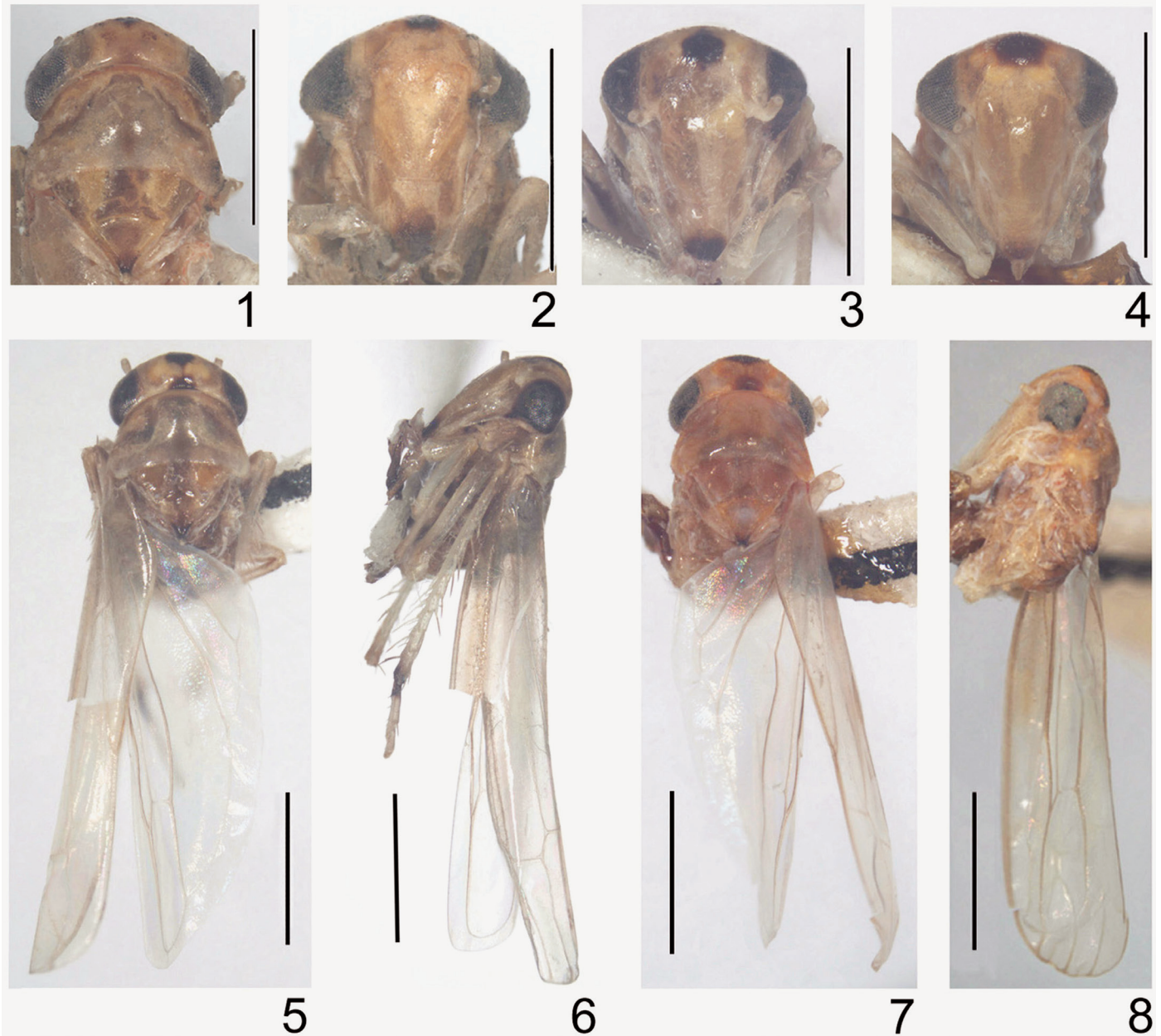
Ishiharella Dworakowska: Qin & Zhang, 2004: 114.

General color sordid ochre to fuscous. Vertex centrally has a brown to black patch at base, sublaterally near eyes with a narrow brownish stripe on each side which is extended to the base of face, the joint of vertex and face with a dark patch medially. Forewing semitransparent, yellowish brown to testaceous, veins brown, hind wing semitransparent. Abdomen brown to black.

Body robust, cylindrical. Head including eyes equal to or slightly shorter than maximum width of pronotum (0.96-1:1) (Figs. 1, 5, 7, 44). Crown short, rounded anteriorly, in dorsal view distinctly shorter than width between eyes, anterior and posterior margins

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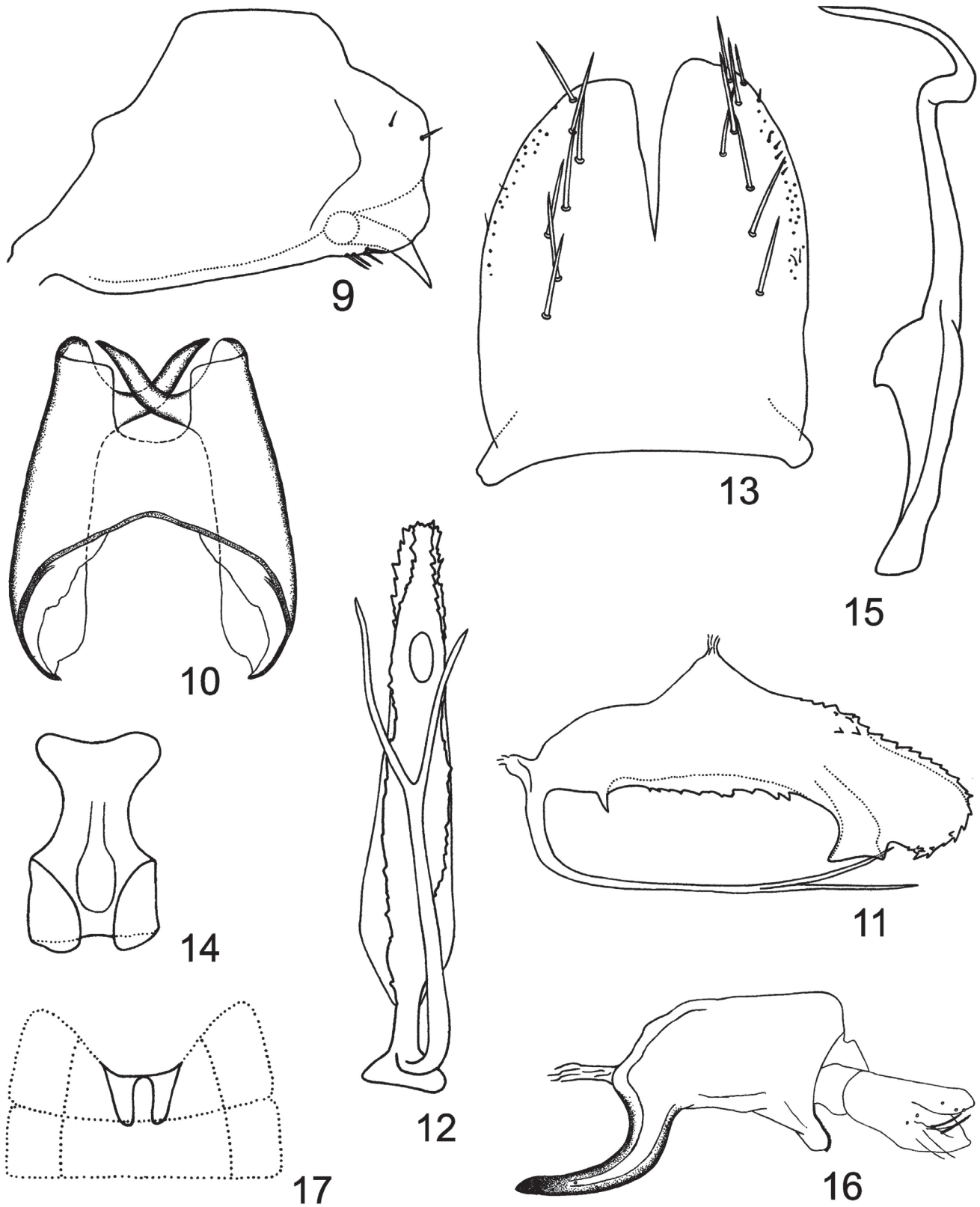


Figs. 1-8. 1. Head and thorax, dorsal view; 2, 3, 4. Face; 5, 7. Male adult (abdomen removed), dorsal view; 6, 8. Male adult (abdomen removed), left lateral view. 1, 2. *Ishiharella dentata* Qin & Zhang (holotype), 3, 5, 6. *Ishiharella hastata* Qin & Zhang (holotype), 4, 7, 8. *Ishiharella iochoui* Dworakowska (holotype of *Ishiharella scitula* Qin & Zhang). Scale bars = 1 mm. This figure is displayed in color in the online version of this article.

subparallel, coronal suture absent (Figs. 1, 5, 7, 44); profile of transition to face rounded (Figs. 6, 8, 45). Ocelli present (Figs. 2-4, 46). Face broad, slightly shorter than median length (0.88-0.92:1), lateral frontal suture present, frontoclypeal area swollen, apparently convex in profile (Figs. 2-4, 6, 8, 45, 46). Pronotum large, lateral part with a sinuate transverse depression on each side (Figs. 1, 5, 7, 44). Forewing narrow, rounded apically, 2nd apical cell broad at base and narrowed towards apex, all apical veins arise from longitudinal m cell, veins RP, MP' stalked, c and r cells narrower than m and cua cells (Figs. 5-8, 18, 44, 45, 52). Hindwing with CuA unbranched (Figs. 19, 53).

Male genitalia. Basal abdominal sternal apodemes developed, parallel-sided (Figs. 17, 28, 37, 47). Pygofer with caudal and ventral margins folded inward, jointly bearing an additional protrusion

near hind margin, directed caudad, ventral appendage absent, dorsal bridge of pygofer short (Figs. 9, 10, 20, 21, 29, 30, 48, 50, 51, 54, 55). Subgenital plates fused only at their bases, lateral margins infolded on both sides, A-group setae absent, B-group and D-group small, starting near middle to subapex of the plate, B-group relatively rigid, arranged in 5-7 irregular rows, D-group setae scattered and few in number, C-group setae starting near base of the plates, mostly arranged in one row (Figs. 13, 24, 33, 41, 58). Connective lamellate caudally and crimped basally (Figs. 14, 25, 34, 40, 59). Paramere spirally twisted apically, or bifurcated at apex and bearing a tooth basad of bifurcation (Figs. 15, 26, 35, 43, 48, 49, 54, 60). Aedeagal shaft tubular, ventrobasally produced (Figs. 11, 12, 22, 23, 31, 32, 38, 39, 49, 54, 56, 57). Anal tube appendage well developed or short and truncated apically (Figs. 16, 27, 36, 42, 48, 49, 54, 61).



Figs. 9-17. *Ishiharella dentata* Qin & Zhang. 9. Male pygofer, left lateral view; 10. Male pygofer, dorsal view; 11. Aedeagus, left lateral view; 12. Aedeagus, ventral view; 13. Subgenital plates, ventral view; 14. Connective; 15. Paramere; 16. Anal tube and anal styli, left lateral view; 17. Abdominal apodemes. (Figs. 12-15 after Qin & Zhang 2004).

REMARKS

When Dworakowska (1970) established the genus *Ishiharella*, she did not provide a comprehensive list of generic characters and noted only that it was “very similar to *Ficiana* Ghauri, differing in some details, viz: coronal suture absent; paramere broadened and spirally twisted apically; connective rudimentary; an additional lobe at hind margin of pygophore side, and subgenital plates fused only at their bases”. Qin & Zhang (2004) redescribed the genus but their description lacked the detailed features of the subgenital plate and the anal tube appendage. This paper redefines the genus *Ishiharella* based on the study of Dworakowska (1970) and Qin & Zhang (2004).

Except for the comparison of *Ishiharella* with the genus *Ficiana* Ghauri, 1963 as noted by Dworakowska (1970), the genus *Ishiharella* Dworakowska is also similar to *Dialecticopteryx* Kirkaldy, 1907. However, *Ishiharella* differs from *Dialecticopteryx* in the absence of the coronal suture of vertex, the 2nd apical cell broad at base and distinctly narrowed towards apex, the paramere spirally twisted or bifurcated apically, the connective not fused with the base of aedeagus and the male pygofer bearing an additional caudoventral protrusion.

Key to species of *Ishiharella* Dworakowska in China (males)

1. Paramere bifurcated apically (Figs. 26, 35, 43) 2
- Paramere not bifurcated apically (Figs. 15, 60) 3
2. Anal tube appendage short, truncated at apex (Figs. 36, 42); caudoventral protrusion of pygofer short, in lateral view not surpassing the end of pygofer side (Figs. 29, 42); paramere bearing a tooth basad of bifurcation (Figs. 35, 43); subgenital plates separated subbasally (Figs. 33, 41) *I. iochoui* Dworakowska
- Anal tube appendage long, rounded at apex (Fig. 27); caudoventral protrusion of pygofer long, in lateral view significantly surpassing the end of pygofer side (Figs. 20, 21); paramere without teeth basad of bifurcation (Fig. 26); subgenital plates separated subapically (Fig. 24) *I. hastata* Qin & Zhang
3. Caudoventral protrusion of pygofer significantly surpassing the end of pygofer side (Figs. 50, 54, 55); anal tube process tuberculate subapically (Fig. 61); aedeagus with dorsoatrium, shaft slightly curved dorsad apically in profile, gonopore terminal on the ventral side, basoventral protrusion of aedeagus longer than the shaft (Figs. 49, 54, 56) *I. paradentata* Lu & Qin, **sp. nov.**
- Caudoventral protrusion of pygofer slightly surpassing the end of pygofer side (Fig. 9); anal tube process not tuberculate subapically (Fig. 16); aedeagus without dorsoatrium, shaft curved ventrad apically in profile, gonopore subterminal on the ventral side, basoventral protrusion of aedeagus shorter than the shaft (Fig. 11) *I. dentata* Qin & Zhang

Ishiharella dentata Qin & Zhang, 2004 (Figs. 1, 2, 9-17)

Ishiharella dentata Qin & Zhang, 2004: 118

Description. Body length: male 4.8 mm.

Color. General color terreous. Vertex with the central trapezoid patch at base brownish, submedially with a small blackish spot on each side (Fig. 1), sublateral stripes near eyes faint but visible at the base of face (Figs. 1, 2). Eyes dark (Figs. 1, 2). Face sordid orange except anteclypeus black apically (Fig. 2). Pronotum with the sinuate transverse depressions black brown (Fig. 1). Centre of scutellum with a trapezoid black brown patch anteriorly, apically black, scutoscuteellar sulcus brown (Fig. 1). Forewing orange yellow. Legs sordid yellow.

Male Genitalia. Basal abdominal sternal apodemes reaching to end of segment 3, apically narrowed (Fig. 17). Male pygofer brown, strongly narrowed dorsally in apical half, with a few rigid setae, posterior margin concave medially, caudoventral protrusion arising subapically near ventral margin, in lateral view slightly surpassing the end of pygofer side, narrowed and curved caudoventrad in apical half (Fig. 9). Subgenital plate broad, separated and tapered in apical half, B-group setae (31-35) in about 6 irregular rows, D-group setae (5-8) scattered in 2 rows, C-group setae (9-12) uniseriate on the left side but biseriately subapically on the right side (Fig. 13). Aedeagal shaft fairly broad, apex curved ventrad, gonopore ventral subterminally, on the dorsal side in apical half and ventrally in apical 3/4 adorned with numerous teeth,

DISCUSSION

The phenomenon of fusion of the subgenital plates occurs in several genera of the tribe Empoascini, including *Ishiharella* Dworakowska, *Dialecticopteryx* Kirkaldy, *Ficiana* Ghauri, *Mahmoodia* Dworakowska and *Nimabanana* Dworakowska. Despite this feature, all of these genera show some similarities in crown proportions (short and rounded anteriorly, anterior and posterior margins subparallel, middle length distinctly shorter than width between eyes), the pygofer characteristics (without ventral appendage), the venation of forewing (all apical veins arise from longitudinal m cell) and hind wing (vein CuA unbranched). It is likely that these genera are more closely related than they are to other genera in the *Empoasca* complex and these phylogenetic relationships need to be evaluated later.

DISTRIBUTION

China (Shaanxi, Guizhou, Hunan, Zhejiang, Fujian, Jiangxi), Japan, Russia.

ventrally with a big tooth at basal 1/3, extreme base of the shaft has a slender process, shorter than shaft, slightly broadened and curved basally, thence parallel to the shaft, apex bifurcated (Figs. 11, 12). Connective lamellate in caudal 3/5, lateral margins concave medially, basal 2/5 of almost the same width and crimped (Fig. 14). Anal tube process evenly curved and gradually tapered to apex in lateral view (Fig. 16).

MATERIAL EXAMINED

CHINA: 1 male (HOLOTYPE of *Ishiharella dentata* only), Shaanxi, Ningdong, Xunyangba, 6-VI-1988, L.H. Yang.

DISTRIBUTION

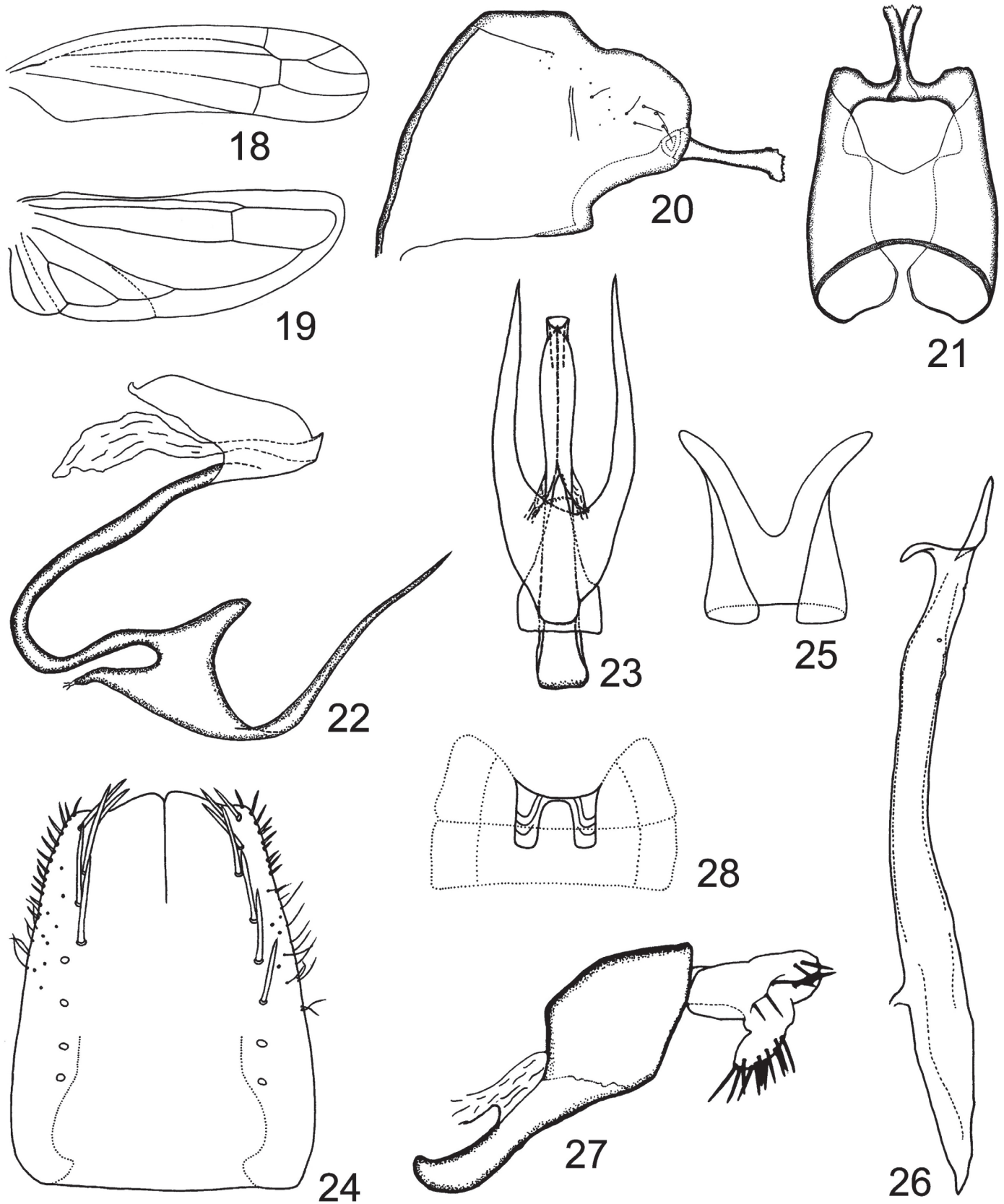
China (Shaanxi).

Ishiharella hastata Qin & Zhang, 2004 (Figs. 3, 5, 6, 18-28)

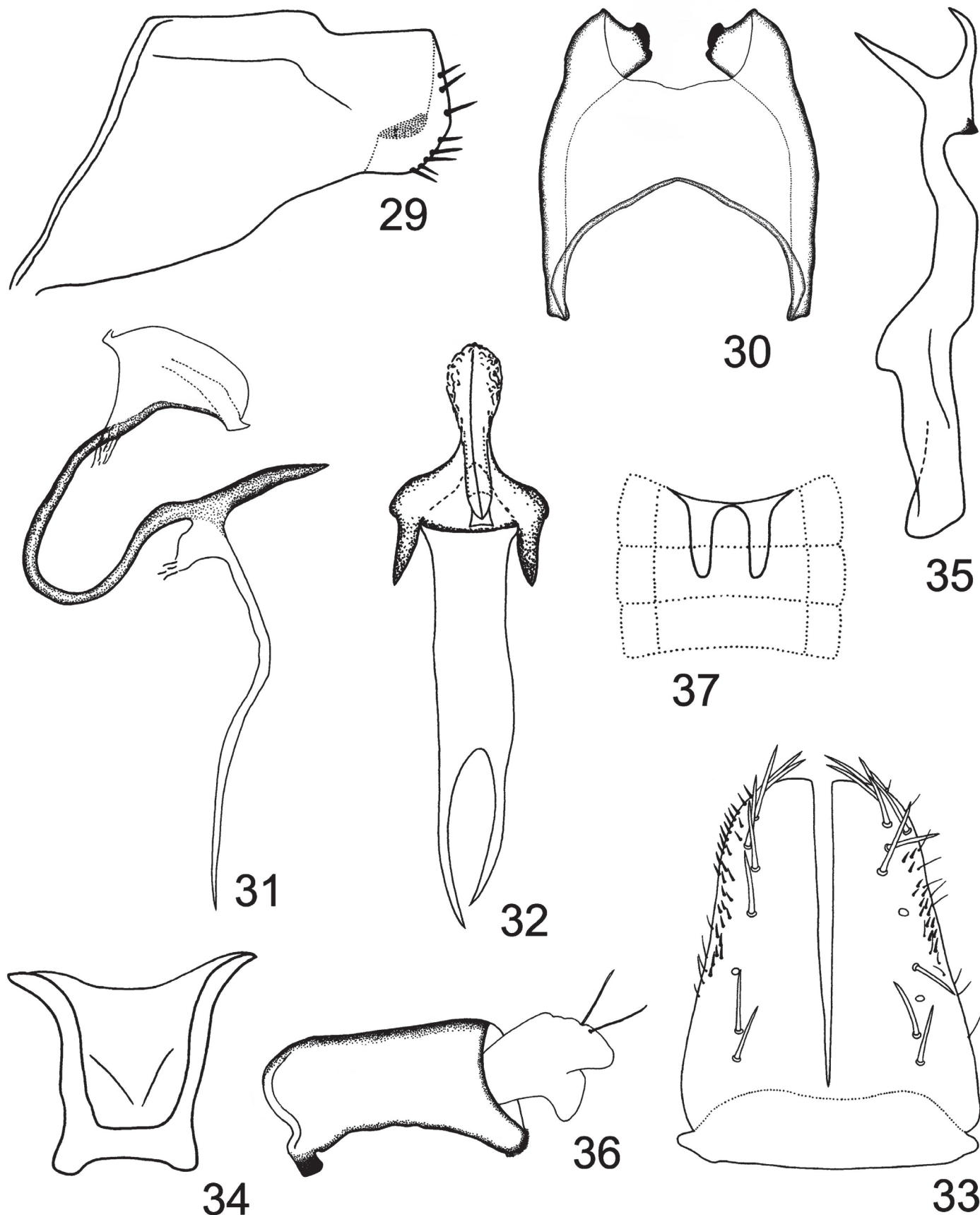
Ishiharella hastata Qin & Zhang, 2004: 115.

Description. Body length: male 4.3 mm.

Color. General color blackish brown. Vertex ochre-yellow, basal trapezoid patch black, anteriorly with a black line and linked to the pentagonal dark patch medially at the joint of vertex and face (Fig. 5), vertex sublaterally near eyes with a brownish stripe on each side which is extended to the base of face (Figs. 3, 5). Eyes dark (Figs. 3, 5, 6). Frontoclypeus with a



Figs. 18-28. *Ishiharella hastata* Qin & Zhang (holotype). 18. Forewing; 19. Hind wing; 20. Male pygofer, left lateral view; 21. Male pygofer, dorsal view; 22. Aedeagus, left lateral view; 23. Aedeagus, ventral view; 24. Subgenital plates, ventral view; 25. Connective; 26. Paramere; 27. Anal tube and anal styli, left lateral view; 28. Abdominal apodemes. (Fig. 25 after Qin & Zhang 2004).



Figs. 29-37. *Ishiharella iochoui* Dworakowska (holotype of *Ishiharella scitula* Qin & Zhang). 29. Male pygofer, left lateral view; 30. Male pygofer, dorsal view; 31. Aedeagus, left lateral view; 32. Aedeagus, ventral view; 33. Subgenital plates, ventral view; 34. Connective; 35. Paramere; 36. Anal tube and anal styli, left lateral view; 37. Abdominal apodemes. (Fig. 34 after Qin & Zhang 2004).

longitudinal stripe medially, yellowish brown, apex of anteclypeus black, rest of area of face orange brown (Fig. 3). Pronotum with the sinuate transverse depressions blackish (Fig. 5). Scutellum centrally has a black trapezoid patch anteriorly, apex black (Fig. 5). Forewing yellow brown (Figs. 5, 6). Legs sordid (Figs. 5, 6).

Male Genitalia. Basal sternal abdominal apodemes reaching segment 4, apically almost truncated (Fig. 28). Male pygofer brown, strongly narrowed in apical half, with filamentous setae on outer face near dorsal margin, caudoventral process straight, distinctly surpassing end of pygofer side, apically serrated and slightly expanded (Figs. 20, 21). Subgenital plates separated near apex, B-group setae (29-33) in about 6 irregular rows, densely distributed near apex, D-group setae (8-13) scattered in about 2 rows, C-group setae (9) uniseriate on the left side but biseriate near apex on the right side (Fig. 24). Paramere long, curved medially and bifurcated apically, subapex bearing a few sensory pits (Fig. 26). Aedeagal shaft short, expanded basad in profile, gonopore terminal, basoventral

protrusion of aedeagus fairly long, strongly curved subbasally, submedially with a broad cavity which is connected with the connective basoventrally, apex of the protrusion slender, sinuate, directed dorsocaudad, in ventral aspect bifurcated at basal third, parallel extended with pointed apex (Figs. 22, 23). Connective deeply emarginated caudally, lateral margins crimped (Fig. 25). Anal tube process developed, nearly straight, slightly broadened near apex and curved apically (Fig. 27).

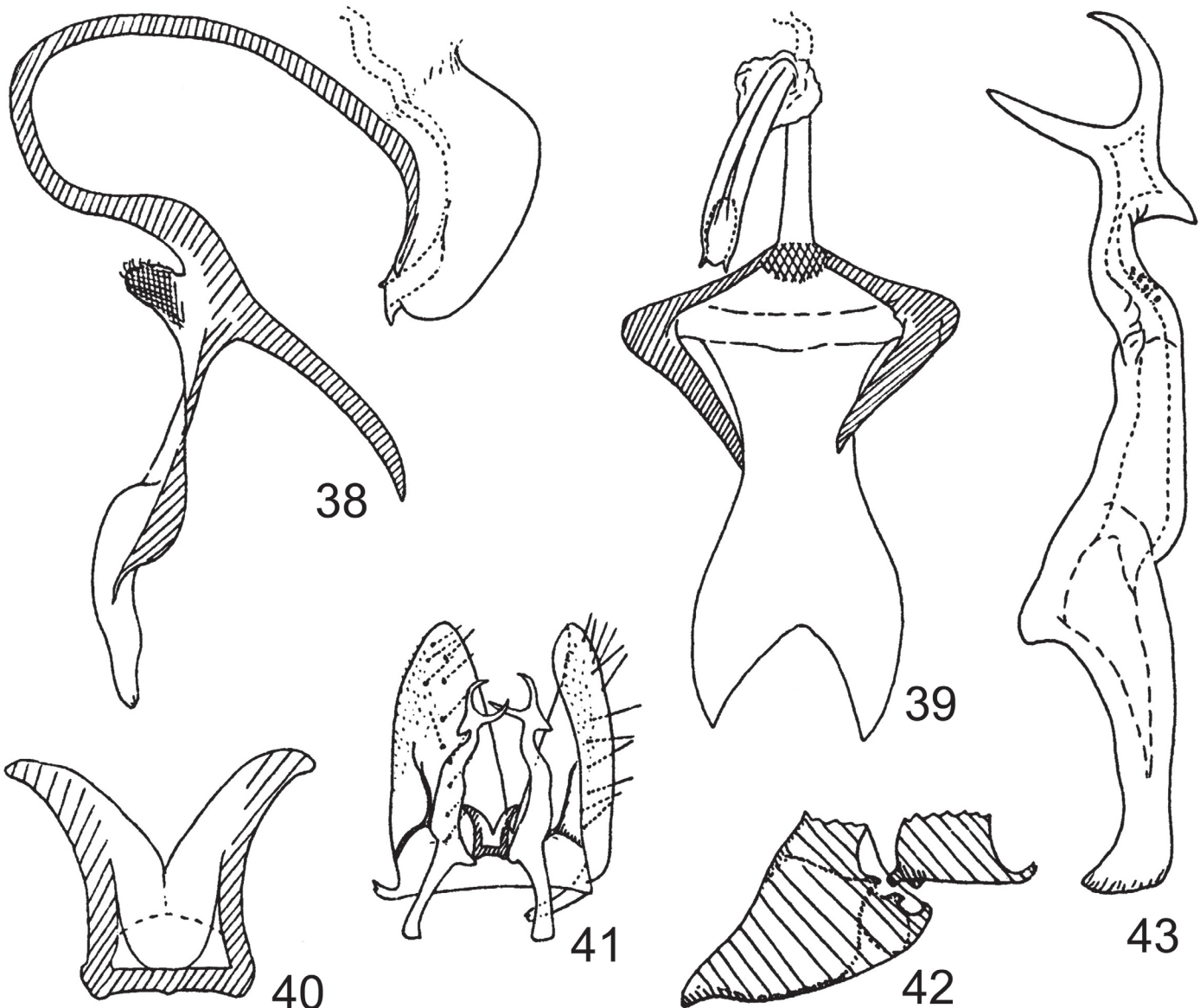
MATERIAL EXAMINED

CHINA: 1 male (HOLOTYPE of *Ishiharella hastata* only), Guizhou, Fanjing Mountains, 3-VIII-2001, Q. Sun.

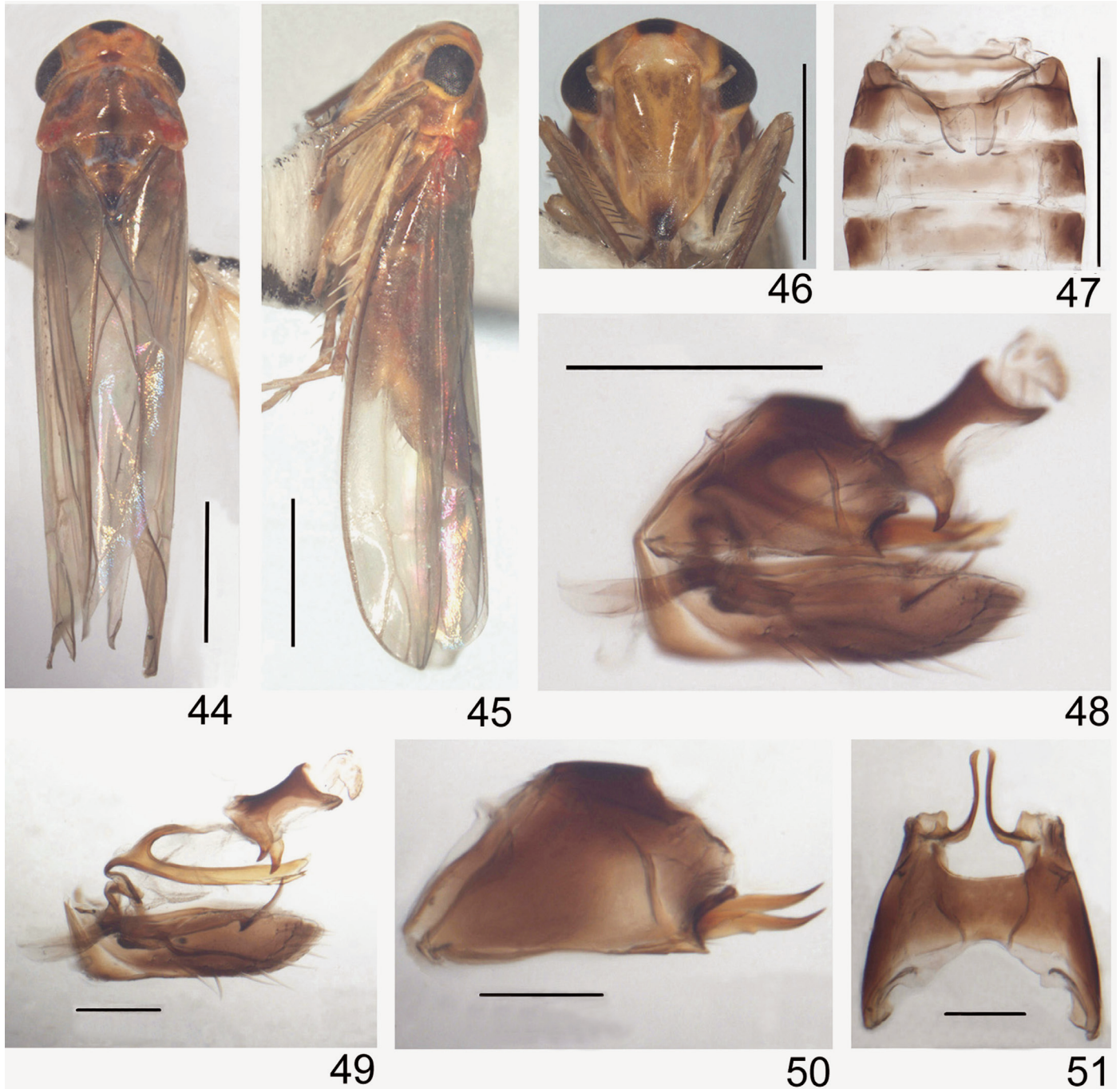
DISTRIBUTION

China (Guizhou).

Ishiharella iochoui Dworakowska, 1982 (Figs. 4, 7, 8, 29-43)



Figs. 38-43. *Ishiharella iochoui* Dworakowska (after Dworakowska 1982). 38. Aedeagus, left lateral view; 39. Aedeagus, ventral view; 40. Connective; 41. Subgenital plates, connective and parameres, dorsal view; 42. Male pygofer and anal tube appendage, left lateral view; 43. Paramere.



Figs. 44-51. *Ishiharella paradentata* Lu & Qin, **sp. nov.** 44. Male adult (abdomen removed), dorsal view; 45. Female adult, left lateral view; 46. Face; 47. Abdominal apodemes; 48. Male genitalia, left lateral view; 49. Anal tube and anal styli, aedeagus, connective, parameres and subgenital plates, left lateral view; 50. Male pygofer, left lateral view; 51. Male pygofer, dorsal view. Scale bars = 1 mm (Figs. 45-47); 0.5 mm (48); 0.2 mm (49-51). This figure is displayed in color in the online version of this article.

Ishiharella iochou Dworakowska, 1982: 55; Qin & Zhang, 2004: 115.

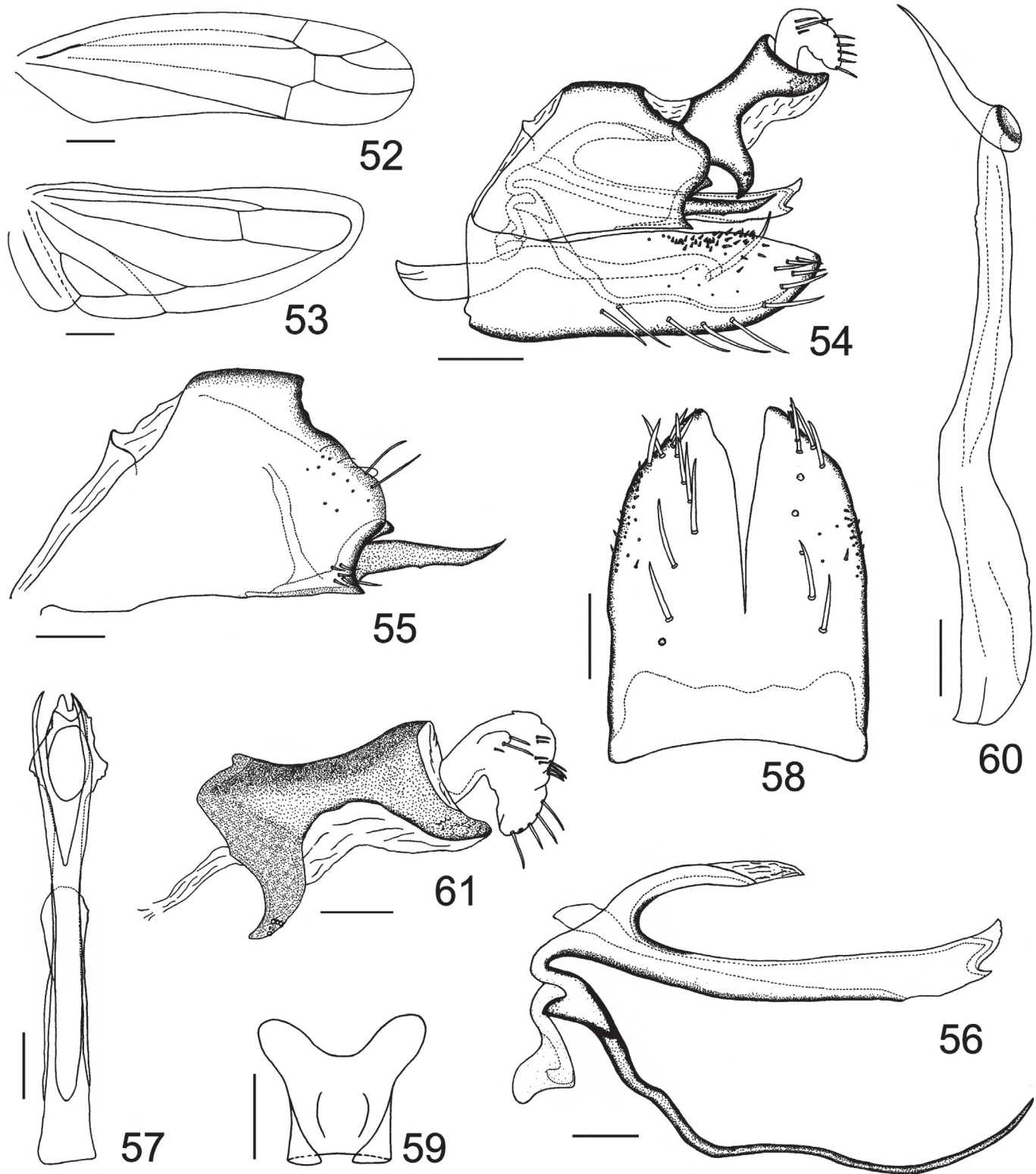
Ishiharella scitula Qin & Zhang, 2004: 116, **syn. nov.**

Description. Body length: male (HOLOTYPE of *I. scitula* Qin & Zhang) 4.0 mm.

Color. General color (HOLOTYPE of *I. scitula* Qin & Zhang) orange brown. Basal trapezoid patch of vertex brownish black, anteriorly with a brown line and linked to the pentagonal dark patch medially at the joint of vertex and face (Fig. 7), sublateral stripes near eyes greyish and brownish at the base of face (Figs. 4, 7). Eyes grayish black (Figs. 4, 7, 8). Frontoclypeus with a longitudinal sordid stripe medially, not reaching apex of frontoclypeus, anteclypeus blackish apically, rest of area of

face brown (Fig. 4). Pronotum with the sinuate transverse depression slightly pigmented (Fig. 7). Scutellum black apically, scutoscutellar sulcus brown (Fig. 7). Forewing yellowish brown (Figs. 7, 8).

Male Genitalia. Basal abdominal sternal apodemes surpassing half of segment 4, apically narrowed (Fig. 37). Male pygofer brown, elongated in lateral view, narrowed in apical 2/5, dorsal margin almost straight, posterior margin truncated dorsally and constricted ventrally, terminally with 8 rigid microsetae on each side of lobe, caudoventral protrusion of pygofer short, in lateral view not surpassing the end of pygofer side, in dorsal aspect skeletonized and incised subbasally (Figs. 29, 30). Subgenital plates separated subbasally, B-group setae (37-41)



Figs. 52-61. *Ishiharella parudentata* Lu & Qin, *sp. nov.* 52. Forewing; 53. Hind wing; 54. Male genitalia, left lateral view; 55. Male pygofer, left lateral view; 56. Aedeagus and connective, left lateral view; 57. Aedeagus, ventral view; 58. Subgenital plates, ventral view; 59. Connective; 60. Paramere; 61. Anal tube and anal styli, left lateral view. Scale bars = 0.5 mm (52, 53); 0.2 mm (54); 0.1 mm (55-61).

in 5-6 irregular rows, D-group (7-12) scattered in 2-3 rows, C-group setae (11-13) uniseriate on the left side but biseriate near apex on the right side (Fig. 33). Paramere sinuate, broad at base, bifurcated at apex and bearing a rigid tooth basad of bifurcation (Fig. 35). Aedeagal shaft

short, expanded basad in profile, gonopore terminus on the ventral side, basoventral protrusion of aedeagus long, strongly curved submedially, apicad of which are developed processes, the ventral process with a distinct cavity which is linked with the connective basoventrally,

caudoventral margin of the cavity with an additional flake-like structure, apical processes paired, spine-like, narrowing in distal half and slightly divergent in ventral aspect (Figs. 31, 32). Connective trapezoidal (Fig. 34). Anal tube process short, truncated at apex (Fig. 36).

MATERIAL EXAMINED

CHINA: 1 male (HOLOTYPE of *I. scitula* Qin & Zhang only), Hunan, Hengshan Mountain, 11-VIII-1985, Y.L. Zhang & Y.H. Chai

REMARKS

Dworakowska (1982) erected *Ishiharella iochoui* based on a single male from southern China (Zhejiang Province) (see the re-illustrations after Dworakowska in Figs. 38-43 in this paper). Qin & Zhang (2004) established *I. scitula* based on a single male collected from southern China as well (Hunan Province). Qin & Zhang noted "*I. scitula* is similar to *I. iochoui* Dworakowska, but differs from the latter by the pygofer long with hind margin truncated in lateral view, by the apical process of basal projections of aedeagus flat and sub-parallel with 2 long apical processes in dorsal view and by the connective nearly trapezoidal rather than 'V'-shaped as the latter". After examining the holotype of *Ishiharella scitula*, we suggest these differences represent variability within one species, and therefore treat the 2 taxa as synonyms.

DISTRIBUTION

China (Zhejiang, Hunan).

Ishiharella paradentata Lu & Qin, **sp. nov.** (Figs. 44-61)

Description. Size. Male 4.6-4.8mm, female 4.7mm.

Color. General color red brown. Vertex sordid orange, medially with a small blackish patch on each side, basal patch of vertex brown, anteriorly with a brownish line and linked to the pentagonal dark patch medially at the joint of vertex and face (Fig. 44), vertex sublaterally near eyes with a visible brown stripe which is extended to the base of face (Figs. 44, 46). Eyes dark (Figs. 44-46). Frontoclypeus brown, medially has a longitudinal stripe, yellow brown, anteclypeus black apically (Fig. 46). Pronotum centrally blackish, laterally with a black sinuate transverse depression on each side, basal angles red (Fig.44). Scutellum with the central trapezoidal patch anteriorly and its apex black, scutoscutellar sulcus black brown (Fig. 44). Forewing reddish basally and brown apicad (Figs. 44, 45). Abdomen black. Legs sordid. Coloration of female same as male except abdomen brownish red, ovipositor brown.

Male Genitalia. Basal abdominal sternal apodemes reaching to end of segment 3, apically narrowed (Fig. 47). Male pygofer brown, apical half strongly narrowed dorsally, with long fine setae caudally and rigid microsetae caudoventrally, pygofer caudoventral protrusion fairly long, in lateral view significantly surpassing the end of pygofer side, narrowing distad with pointed apex, ventrally bearing a tooth in middle (Figs. 48, 50, 54, 55). Subgenital plates separated in basal 2/5, B-group setae (28-31) in 5-6 irregular rows, D-group setae (5-7) in about 2 rows, C-group setae (10-11) uniseriate in most part, subapically arranged in 3 rows on both sides (Fig. 58). Paramere distinctly longer than pygofer, broad at base and narrowing apicad, apex spirally twisted, subbasally adorned with 4-5 teeth laterally (Figs. 48, 49, 54, 60). Aedeagal shaft tubular, slightly broadened and curved caudad toward apex, caudal margin incised basally, dorsally bearing 4-5 small teeth, gonopore terminal on ventral side, dorsoatrium shorter than shaft, skeletonized basally and membranous apically, basoventral protrusion of aedeagus slender, sinuate, slightly longer than shaft, subbasal cavity distinct, apically bifurcated (Figs. 48, 49, 54, 56, 57). Connective lamellate caudally and crimped basally, caudal margin concave medially (Fig. 59). Anal tube process skeletonized, strongly tapered and curved toward apex, tuberculate subapically (Figs. 48, 49, 54, 61).

ETYMOLOGY

The species epithet is derived from the combination of "para-" and "dentata" which refers to the similarity of this new species to *Ishiharella dentata* Qin & Zhang, 2004.

TYPE MATERIAL

HOLOTYPE male CHINA: Zhejiang, Tianmu Mountain, 25-VII-2011, L. Lu. PARATYPES. 1 male, Fujian, Wuyi Mountain, Dazhulan, 25-VII-2006, M.X. Yang; 1 male 1 female, Jiangxi, Suichuan, 13-VIII-2004, C. Wei & M.X. Yang; 1 male, Jiangxi, Suichuan, 10-VIII-2004, C. Wei & M.X. Yang.

REMARKS

This new species is similar to *I. dentata* Qin & Zhang, but differs in male genitalia (features of *I. dentata* in parentheses): dorsoatrium of aedeagus present (dorsoatrium absent), aedeagal shaft slightly curved dorsad and with 4-5 small teeth apically (aedeagal shaft curved ventrad apically and serrated in most part), caudoventral protrusion of pygofer significantly surpassing the end of pygofer side, sinuate, ventrally bearing a tooth medially (caudoventral protrusion slightly surpassing the end of pygofer side, curved ventrad and without teeth).

DISTRIBUTION

China (Fujian, Jiangxi, Zhejiang).

Acknowledgments

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References Cited

- Dworakowska, I. 1970. On some genera of Typhlocybini and Empoascini (Auchenorrhyncha, Cicadellidae, Typhlocybinae). Bulletin de l'Académie Polonaise des Sciences, Série des Sciences Biologiques 18(11): 707-716.
- Dworakowska I. 1982. Empoascini of Japan, Korea and north-east part of China (Homoptera, Auchenorrhyncha, Cicadellidae, Typhlocybinae). Reichenbachia 20(1): 33-57.
- Dworakowska I. 1993. Remarks on *Alebra* Fieb. and Eastern Hemisphere Alebrini (Auchenorrhyncha: Cicadellidae: Typhlocybinae). Entomotaxonomia 15(2): 91-121.
- Ghuri MSK. 1963. New fig leaf-hoppers (Homoptera: Cicaloidea) from India with redescription of allied species under new genera. Annals and Magazine of Natural History (Series 13) 6: 465-475.
- Kirkaldy GW. 1907. Leafhoppers supplement (Hemiptera). Bulletin of the Hawaiian Sugar Planters' Association (Entomology) 3: 1-186.
- Knight WJ. 1965. Techniques for use in the identification of leafhoppers (Homoptera: Cicadellidae). Entomologist's Gazette 16(4): 129-136.
- Matsumura S. 1931. A revision of the Palaearctic and Oriental Typhlocybid-genera with descriptions of new species and new genera. Insecta Matsumurana 6(2): 55-91.
- Ohara N. 2010. Two new typhlocybinae leafhoppers (Auchenorrhyncha, Cicadellidae) from the Ryukyu Islands, Japan. Japanese Journal of Systematic Entomology 16(2): 255-260.
- Oman PW. 1949. The Nearctic leafhoppers (Homoptera: Cicadellidae). A generic classification and check list. Memoirs of the Entomological Society of Washington 3: 1-253
- Qin DZ, Zhang YL. 2004. Taxonomic study of *Ishiharella* (Homoptera: Cicadellidae: Typhlocybinae) with descriptions of three new species from China. Entomotaxonomia 26(2): 114-120.
- Southern PS. 1982. A taxonomic study of the leafhopper genus *Empoasca* (Homoptera: Cicadellidae) in eastern Peru. Technical Bulletin No. 272. North Carolina State University, Raleigh, N.C. 194 pp.
- Zhang YL. 1990. A taxonomic study of Chinese Cicadellidae (Homoptera). Yangling: Tianze Eldonejo. 218 pp.