

New genera, species and records of the microleafhopper tribe Alebrini (Hemiptera: Cicadellidae: Typhlocybinae) from south China

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Abstract: We report a genus with 2 species newly from China and describe 2 new genera and 3 new species of the tribe Alebrini (Hemiptera: Cicadellidae: Typhlocybinae) to science: the newly-recorded genus *Orientalebra* Dworakowska **rec. nov.** with 2 new records species, *O. gembata* Dworakowska **rec. nov.** and *O. drawidana* Dworakowska **rec. nov.**, and a new species, *O. brevicolumnaria* Kang & Zhang **sp. nov.**; the new genus *Brachyblastus* Kang & Zhang **gen. nov.** with its type species *B. rhombeus* Kang & Zhang **sp. nov.** and the new genus *Pedalobulus* Kang & Zhang **gen. nov.** with its type species *P. quinquegeminatus* Kang & Zhang **sp. nov.** Detailed morphological illustrations and a key to males of new taxa are provided.

Key words: Auchenorrhyncha; Membracoidea; taxonomy

中国南方眼小叶蝉族新属、新种和新记录（半翅目：叶蝉科：小叶蝉亚科）

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摘要: 记述眼小叶蝉族 1 中国新记录属 2 中国新记录种、2 新属和 3 新种。中国新记录属为东方小叶蝉属 *Orientalebra* Dworakowska **rec. nov.**, 同时记述 2 中国新记录种: 满刺东方小叶蝉 *O. gembata* Dworakowska **rec. nov.** 和达罗东方小叶蝉 *O. drawidana* Dworakowska **rec. nov.**, 1 新种: 短干东方小叶蝉 *O. brevicolumnaria* Kang & Zhang **sp. nov.**; 新属短干小叶蝉属 *Brachyblastus* Kang & Zhang **gen. nov.** 以新种菱斑短干小叶蝉 *B. rhombeus* Kang & Zhang **sp. nov.** 为模式种; 新属足瓣小叶蝉属 *Pedalobulus* Kang & Zhang **gen. nov.** 以新种五斑足瓣小叶蝉 *P. quinquegeminatus* Kang & Zhang **sp. nov.** 为模式种。本文还提供了所有新分类单元的雄虫形态特征图和检索表。

关键词: 头喙亚目; 角蝉总科; 分类

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Introduction

The microleafhopper tribe Alebrini was erected by McAtee (1926) on the type genus *Alebra* Fieber, 1872. So far, 32 genera and 170 species of Alebrini have been recorded around the world; 4 genera and 14 species of Alebrini have been reported from China. Here we add 2 new genera and 3 new species with 1 new record genus with 2 new record species to Chinese fauna of the tribe Alebrini.

Material and methods

Specimens of the new species were collected with sweep nets and light traps in several provinces of China. For morphological study of the genital structures, the entire abdomens were immersed in the solution of 10% NaOH at room temperature for 24 hours. For illustration, genital structures were immersed in glycerin. Morphological terminology of the adult genitals follows Zhang (1990), but wing venation follows Dworakowska (1993). Digital photographs were taken with a Canon EOS R7 digital camera (CCD), and stacked by Helicon Focus Pro v8.1.0 software. Line diagrams of the male genitalia were drawn using an OLYMPUS PM-10AD microscope and Adobe Illustrator CC 2019 software. All figures were edited using Adobe Photoshop CC 2019 software. The type specimens of the new species are deposited in the collections of the Entomological Museum, Northwest A&F University, Yangling, China.

Taxonomy

Key to genera (♂)

1. Forewing with 2nd apical cell stalked, subtriangular 2
- Forewing with 2nd apical cell not stalked, quadrilateral 3
2. Pygofer side pedate, posteroventral margin strongly produced; forewing with vein RP contact with vein CuA' *Pedalobulus* **gen. nov.**
- Pygofer side quadrilateral; forewing with vein RP not contact with vein CuA' *Brachyblastus* **gen. nov.**
3. Forewing dark with numerous transparent round spots *Orientelebra* **rec. nov.**
- Forewing not so 4
4. Forewing with appendix not extending around wing apex 5
- Forewing with appendix extending around wing apex 6
5. Hind wing with submarginal vein confluent with vein RP *Asialebra*
- Hind wing with submarginal vein evanescent apically *Sobrala*
6. Hind wing with submarginal vein confluent with vein RP *Alebra*
- Hind wing with submarginal vein evanescent apically *Shaddai*

Orientelebra Dworakowska, new record to China

Orientelebra Dworakowska, 1971: 497.

Type species. *Orientelebra gembata* Dworakowska, 1971.

The genus *Orientelebra* was erected by Dworakowska in 1971 with *O. gembata* Dworakowska, 1971 as type species, then *O. malayana* Dworakowska, 1984 was reported

from India and Malaysia and *O. drawidana* Dworakowska, 1993 was described from India. 3 species of the genus *Orientalebra* have been reported worldwide. Here, we record this genus with 2 species for the first time from China and add a new species to it.

Distribution. Oriental Region.

Description. Body long and narrow, light yellow or dark brown, with scattered light spots on upper surface. Forewing brown in basal half; hind wing transparent with blackish veins. Head wider than pronotum, vertex short and round. Pronotum with anterior margin produced; posterior margin straight or slightly produced forward; median length of pronotum more than twice head median length. Forewing with appendix broad and long, submarginal vein extended to 3rd apical cell; 1st apical cell narrow and long; 3rd apical cell parallel-sided; 4th apical cell subtriangular; apical veins between apical cells strongly curved (Fig. 1A). Hind wing with vein R confluent with submarginal vein (Fig. 1B).

Abdominal apodeme weak. Male pygofer side with several setae along posterodorsal margin; disc with some microsetae and small teeth or not. Subgenital plate elongate, with tip bent dorsad, ventral surface with row of thick macrosetae and microsetae on outer margin. Connective U-shaped or V-shaped. Paramere hooked apically, with longish setae on preapical lobe. Aedeagus simple, gonopore apical.

Key to species (♂)

1. Aedeagus with shaft almost as long as dorsal apodeme (Fig. 2H)..... *O. gembata* **rec. nov.**
- Aedeagus with shaft not as long as dorsal apodeme 2
2. Pygofer side with posterior margin flat, ventral process bluntly rounded (Fig. 1E).....
- *O. brevicolumnaria* **sp. nov.**
- Pygofer side with posterior margin protruding backward, ventral process absent (Fig. 3C)
- *O. drawidana* **rec. nov.**

1. *Orientalebra brevicolumnaria* Kang & Zhang **sp. nov.** (Fig. 1)

Description. Length of male 2.70–2.85 mm. Crown yellowish, with 2 rectangular brown markings. Pronotum brown, anterior margin yellow; scutum and scutellum yellow (Figs 1J–L). Forewing yellowish brown in basal 1/3 with small separate yellowish spots (Fig. 1A). Hind wing transparent with brown veins (Fig. 1B).

Abdominal apodeme not extending to end of third sternite (Fig. 1C). Male pygofer side with several rigid microsetae on mid-dorsal and posterodorsal margin; dorsal process sharp, ventral process bluntly rounded (Fig. 1E). Subgenital plate exceeding posterior margin of pygofer, with tip smoothly curved dorsad (Fig. 1D), ventral surface with row of thick macrosetae in middle and numerous rigid microsetae on lateral margin of upper half (Fig. 1F). Paramere elongate, hooked apically, with 2 microsetae subapically (Fig. 1G). Connective shallowly V-shaped (Fig. 1H). Aedeagus broad basally with well-developed dorsal apodeme; shaft simple (Fig. 1I).

Holotype. ♂, **China**, Yunnan, Jinghong City, Mengyang Town, alt. 800 m, 07-VI-1991, coll. Guangchun LIU & Wanzhi CAI. **Paratypes.** 2♂, same data as holotype; 2♂, Xishuangbanna Dai Autonomous Prefecture, Nabanhe Nature Reserve, Mandian Village, alt. 700 m, 01-VI-2022, coll. Junjie WANG.

Etymology. The specific name is combined with the Latin words “brevi- (short)” and

“columna”, referring to the columnar aedeagal shaft.

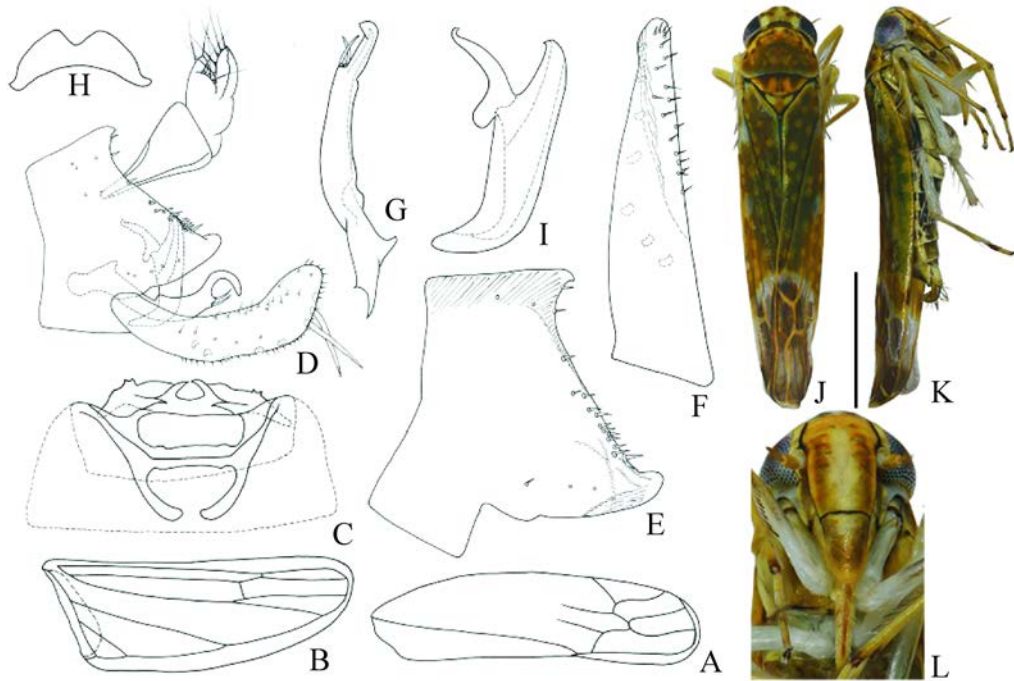


Figure 1. *Orientalabra brevicolumnaria* Kang & Zhang **sp. nov.** A. Forewing; B. Hind wing; C. Abdominal apodemes; D. Genital capsule; E. Pygofer side, lateral view; F. Subgenital plate; G. Paramere; H. Connective; I. Aedeagus, lateral view; J, K. Habitus, dorsal and lateral views; L. Head, ventral view. Scale bar = 1 mm (J, K).

Remarks. The new species is similar to *O. gembata*, except for the shorter shaft, smoothly bent tip of the subgenital plate and lighter body color. And the new species with flat posterior margin and bluntly rounded ventral process of pygofer side can also be differed it from *O. drawidana*.

2. *Orientalabra gembata* Dworakowska (Fig. 2), new record to China

Orientalabra gembata Dworakowska, 1971: 497.

Description. Length of male 3.20 mm. Body dark brown. Crown yellow, with 2 rectangular dark brown markings. Pronotum brown with anterior margin yellow, with some yellow spots; scutum and scutellum yellow (Figs 2I–K). Forewing brown in basal 1/3 with some separate transparent round spots, veins transparent. Hind wing transparent with brown veins.

Abdominal apodeme not extending to end of third sternite (Fig. 2A). Male pygofer side triangular, with several rigid and soft microsetae on posterodorsal margin; disc with some small teeth on mid-dorsal part (Fig. 2B). Subgenital plate exceeding posterior margin of pygofer, with tip abruptly fold dorsad and subvertical to basal part (Fig. 2D), ventral surface with row of thick macrosetae in middle and numerous rigid microsetae on lateral margin of apical lobe and narrowed place, and numerous microsetae in middle ventral surface (Fig. 2C). Paramere elongate, hooked apically, with several long and thin setae preapically (Figs 2E, 2F).

Connective V-shaped (Fig. 2G). Aedeagus with dorsal apodeme well-developed, preatrium relatively developed; shaft thick with dorsal part almost as long as dorsal apodeme; gonopore apical (Fig. 2H).

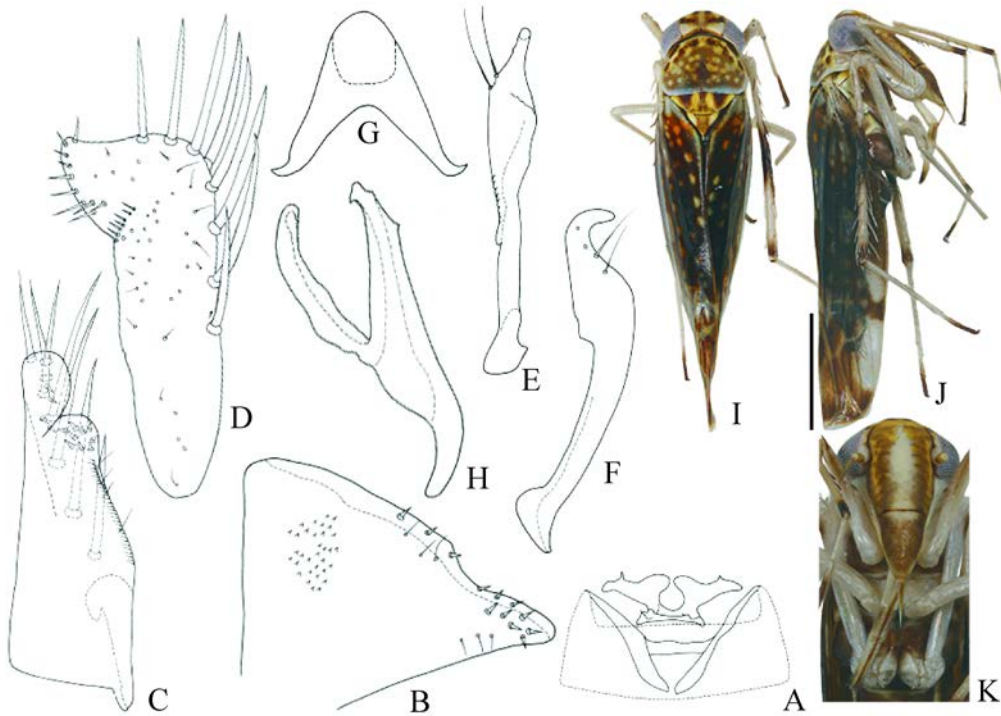


Figure 2. *Orientalabra gemebata* Dworakowska **rec. nov.** A. Abdominal apodemes; B. Pygofer side, lateral view; C, D. Subgenital plate, dorsal and lateral views; E, F. Paramere, dorsal and lateral views; G. Connective; H. Aedeagus, lateral view. I, J. Habitus, dorsal and lateral views; K. Head, ventral view. Scale bar = 1 mm (I, J).

Specimens examined. 1♂1♀, **China**, Guangxi, Longrui Nature Reserve, 20-V-1984, coll. Zhengliang WU; 11♂, Yunnan, Xishuangbanna Dai Autonomous Prefecture, Nabanhe Nature Reserve, Mandian Village, alt. 700 m, 01-VI-2022, coll. Junjie WANG.

3. *Orientalabra drawidana* Dworakowska (Fig. 3), new record to China

Orientalabra drawidana Dworakowska, 1993: 103.

Description. Length of male 2.90–3.15 mm. Body brown-yellow. Crown yellowish, with 2 rectangular brown markings. Pronotum brown with anterior margin yellowish; scutum and scutellum brown (Figs 3G–I). Forewing orange-brown in basal 1/3 with some separate white round spots, veins transparent. Hind wing transparent with brown veins.

Abdominal apodeme not extending to end of third sternite (Fig. 3A). Male pygofer side with row of thick short setae on posterior margin, which protruding backward; dorsal process sharp (Fig. 3C). Subgenital plate exceeding posterior margin of pygofer, with tip curved dorsad, ventral surface with row of thick macrosetae in middle and numerous thin long setae on outer margin laterally, and group of short peglike microsetae subapically and small teeth

near middle ventral surface (Fig. 3D). Paramere elongate, arched apically, with 2 long thin setae near to central part (Fig. 3F). Connective V-shaped (Fig. 3B). Aedeagus with dorsal apodeme well-developed (diagonal part sclerotized in Fig. 3E), preatrium relatively developed; shaft short; gonopore apical.

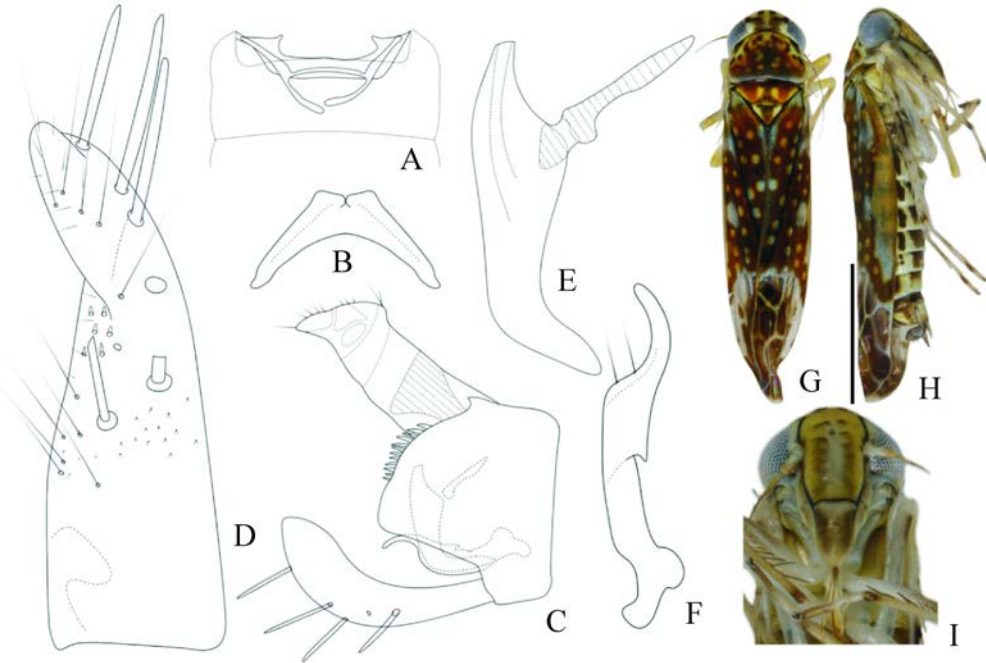


Figure 3. *Orientebra drawidana* Dworakowska **rec. nov.** A. Abdominal apodemes; B. Connective; C. Genital capsule; D. Subgenital plate; E. Aedeagus, lateral view; F. Paramere; G, H. Habitus, dorsal and lateral views; I. Head, ventral view. Scale bar = 1 mm (G, H).

Specimens examined. 16♂, **China**, Yunnan, Xishuangbanna Dai Autonomous Prefecture, Nabanhe Nature Reserve, Guomen Mountain, 22°14'31.36"N, 100°36'26.12"E, alt. 1,100 m, 04-VI-2022, coll. Junjie WANG.

***Brachyblastus* Kang & Zhang gen. nov.**

Type species. *Brachyblastus rhombeus* Kang & Zhang **sp. nov.**

Description. Body small. Head narrower than pronotum (Fig. 4A); crown with anterior margin bluntly rounded, slightly produced, parallel to posterior margin; median length less than interocular width; coronal suture distinct; face convex in lateral view; anteclypeus slender. Pronotum with anterior margin curved, posterior margin slightly curved, lateral margin produced; median length of pronotum almost as long as twice crown median length. Forewing with appendix short, not extending around wing apex (Fig. 4B). Hind wing with submarginal vein confluent with vein R (Fig. 4C).

Abdominal apodeme weak. Male genital capsule flat in lateral view. Pygofer side with apical part quadrate, with macrosetae on posterodorsal margin. Subgenital plate exceeding posterior margin of pygofer, tapering to apex, with row of rigid microsetae from base to apex. Paramere elongate. Aedeagus with dorsal apodeme and preatrium developed; shaft short;

gonopore apical.

Etymology. The new generic name is combined with Greek words “brachy (short)” and “blastos (budlet)”, referring to the short aedeagal shaft.

Remarks. This genus is similar to the genus *Alebra* Fieber in light body color and size, but can be differed from forewing with appendix not extending around wing apex and apical cells much irregular.

Gender. Masculine.

Distribution. Oriental Region.

4. *Brachyblastus rhombeus* Kang & Zhang sp. nov. (Fig. 4)

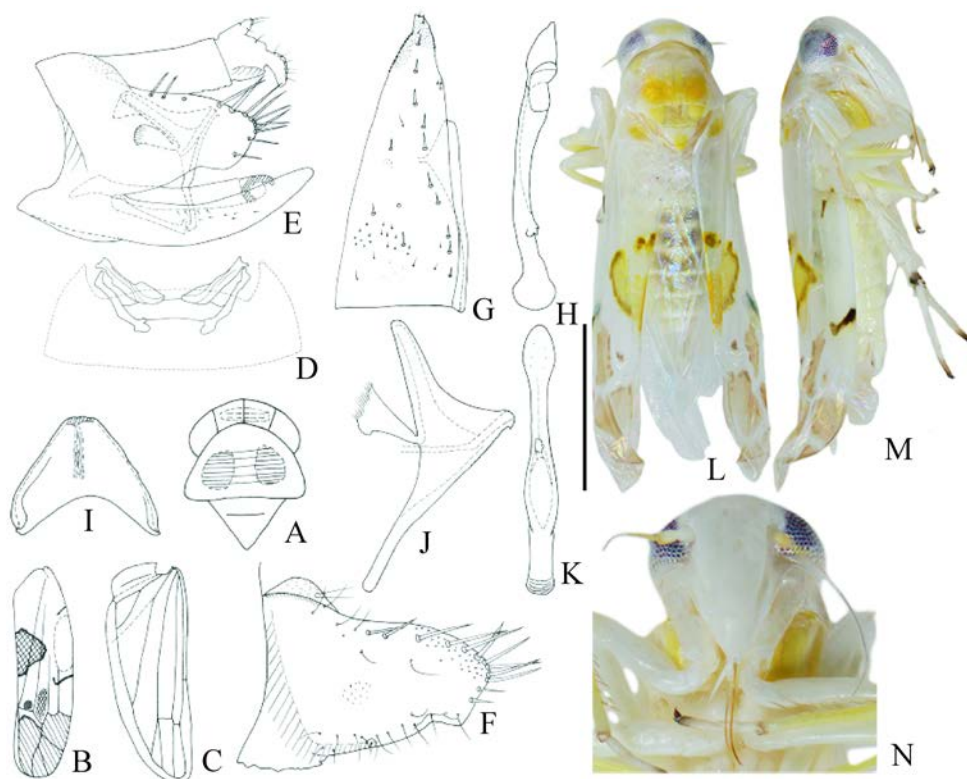


Figure 4. *Brachyblastus rhombeus* Kang & Zhang sp. nov. A. Anterior dorsum (crown, pronotum & scutellum, dorsal view); B. Forewing; C. Hind wing; D. Abdominal apodemes; E. Genital capsule; F. Pygofer side, lateral view; G. Subgenital plate; H. Paramere; I. Connective; J, K. Aedeagus, lateral and posterior views; L, M. Habitus, dorsal and lateral views; N. Head, ventral view. Scale bar = 1 mm (L, M).

Description. Length of male 3.10–3.25 mm. Crown beige. Pronotum light yellow, with 2 combined obscure yellowish patches; scutum and scutellum beige, with triangles yellowish; scutoscutellar sulcus white (Figs 4L–N). Forewing transparent, with brown-edged triangular light yellow patch near middle of posterior margin and oblique short brown line at middle of anterior margin; apical cells and apical m cell smoky brown but transparent around veins; vein $MP''+CuA'$ directly confluent with vein MP' and RP ; vein RP oblique, with tip rarely branched; 1st apical cell broad; 2nd apical cell small, subtriangular and stalked; 3rd apical

cell wider at apex; 4th apical cell subsquare (Fig. 4B). Hind wing transparent (Fig. 4C).

Abdominal apodeme reaching to middle of third sternite (Fig. 4D). Pygofer side heavily sclerotized at base, with apical part quadrate, with macrosetae on posterior and posterodorsal margin and some long and thin setae on ventral and anterior dorsal margin (Figs 4E, 4F). Subgenital plate with row of rigid microsetae from base to apex (Fig. 4G). Paramere sclerotized apically (Fig. 4H). Connective shallowly V-shaped (Fig. 4I). Aedeagus with dorsal apodeme and preatrium developed; shaft short with developed dorsal protrusion nearly triangular (Figs 4J, 4K).

Holotype. ♂, **China**, Yunnan, Jinghong City, Mengyang Town, alt. 790 m, 07-VI-1991, coll. Guangchun LIU & Wanzhi CAI. **Paratypes.** 12♂, same data as holotype; 11♂, Xishuangbanna Dai Autonomous Prefecture, Nabanhe Nature Reserve, Mandian Village, alt. 700 m, 01-VI-2022, coll. Junjie WANG & Xian ZHOU, trapped by light.

Etymology. The specific name comes from Latin word “rhombus”, referring to the light yellow patches on posterior margins of each forewing which unites and forms a big rhombic patch when it rests.

Remarks. The new species is similar to *Alebra albostrigata* (Fallén) in light body color, but with the shaft shorter and venation pattern of forewing different.

***Pedalobulus* Kang & Zhang gen. nov.**

Type species. *Pedalobulus quinquegeminatus* Kang & Zhang **sp. nov.**

Description. Body small. Head narrower than pronotum (Fig. 5A); crown slightly produced, with posterior margin curved; median length less than interocular width; coronal suture distinct. Pronotum with anterior margin curved, posterior margin slightly curved; median length of pronotum less than twice crown median length. Forewing with appendix short, not extending around wing apex (Fig. 5B). Hind wing with submarginal vein confluent with vein R, 1st apical cell closed (Fig. 5C).

Abdominal apodeme weak. Pygofer side pedate in lateral view, dorsal margin with some setae. Subgenital plate exceeding posterior margin of pygofer. Aedeagus with dorsal apodeme and preatrium relatively developed; gonopore apical.

Etymology. The generic name comes from the combination of Latin words “peda- (foot-like)” and “lobulus (lobe)”, referring to lateral foot shaped pygofer lobes.

Remarks. This genus is similar to the genus *Alebra* Fieber in light body color, but differs from the latter by forewing with appendix not extending around wing apex.

Gender. Masculine.

Distribution. Oriental Region.

5. *Pedalobulus quinquegeminatus* Kang & Zhang sp. nov. (Fig. 5)

Description. Length of male 3.75–4.10 mm. Crown and pronotum light yellow; vertex with pair of obscure white spots overlap ocellus. Scutum and scutellum yellowish, triangles yellow; scutoscutellar sulcus white (Figs 5L–N). Forewing yellowish or transparent, with apical cells infuscate but transparent around veins; 4 dark brown spots on both ends of brochosomes area, central of cua cell and claw area respectively, a bigger brownish spot on end of cua cell; vein MP"+CuA' curved, confluent with vein MP', vein RP contact with vein CuA'; 1st apical cell broad, wider at base; 2nd apical cell small, subtriangular; 3rd apical cell triangular; 4th apical

cell broad (Fig. 5B). Hind wing transparent, 3 apical cells similar (Fig. 5C).

Abdominal apodeme very weak (Fig. 5D). Pygofer side with ventral part strongly produced and tapering to apex with rigid thick setae along dorsal margin; dorsal part short, slightly sclerotized at dorsal margin with several rigid thick setae on posterior end (Fig. 5F). Subgenital plate slightly exceeding posterior margin of pygofer (Fig. 5E), somewhat curved dorsad, ventral surface with numerous microsetae (Fig. 5G). Paramere hooked and sclerotized apically, preapical part and base expanded (Fig. 5H). Connective V-shaped (Fig. 5I). Aedeagus with dorsal apodeme and preatrium developed; shaft thick, short and expanded basally, with a preapical dorsal process which slightly bifurcate apically (Figs 5J, 5K).

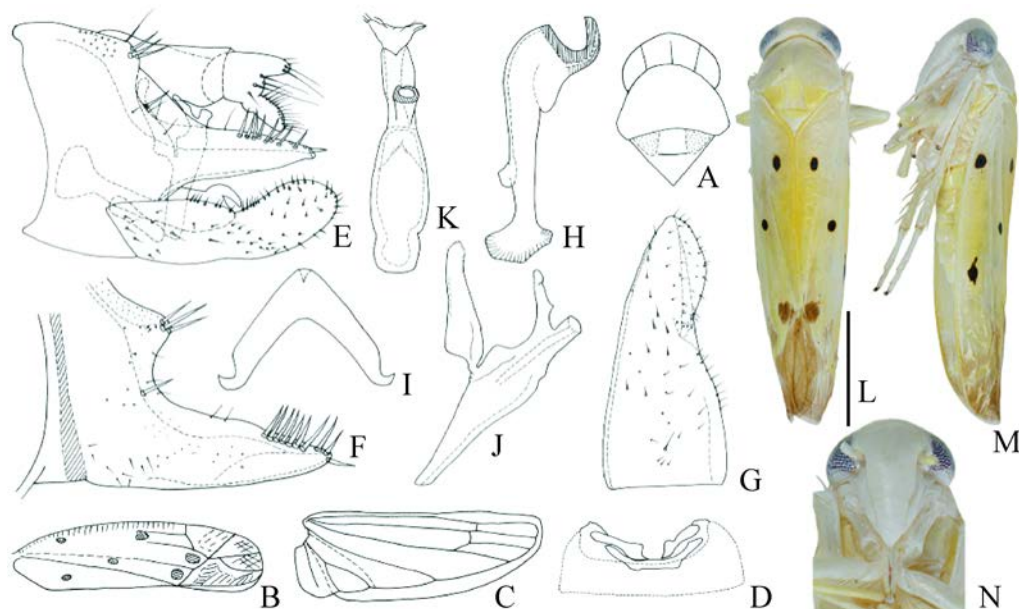


Figure 5. *Pedalobulus quinquegeminatus* Kang & Zhang **sp. nov.** A. Anterior dorsum (crown, pronotum & scutellum, dorsal view); B. Forewing; C. Hind wing; D. Abdominal apodemes; E. Genital capsule; F. Pygofer side, lateral view; G. Subgenital plate; H. Paramere; I. Connective; J, K. Aedeagus, lateral and posterior views; L, M. Habitus, dorsal and lateral views; N. Head, ventral view. Scale bar = 1 mm (L, M).

Holotype. ♂, **China**, Fujian, Wuyi Mountain, Tongmu Village, alt. 780 m, 03-VII-2009, coll. Yanghui CAN. **Paratypes.** 7♂, same data as holotype; 9♂, **China**, Guizhou, Zunyi City, Xishui County, 27-VI-2018, coll. Zihao XIAO; 4♂, Hunan, Chenzhou City, Mangshan National Forest Park, 27-VII-1985, coll. Yalin ZHANG & Yonghui CHAI; 1♂, Sichuan, Leshan City, Mount E'mei, 17-VII-2021, coll. Linhao WU; 1♂, Guangxi, Guilin City, Huaping National Nature Reserve, 31-VII-2017, coll. Mei TANG.

Etymology. The new species name comes from the combination of Latin words “quinque (five)” and “geminatus (pair)”, referring to five pairs of spots on forewings.

Remarks. This species is similar to the *A. albostriella* (Fallén) except forewing with 5 dark brown spots and short shaft.

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