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A new leafhopper species of the genus *Mitjaevia* (Hemiptera: Cicadellidae: Typhlocybinae) from Guizhou Province, Southwest China

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Abstract

To supplement biodiversity data for the genus *Mitjaevia* (Cicadellidae: Typhlocybinae: Erythroneurini) in China, this study is based on a holotype specimen collected from Dongshan Park, Duyun City, Guizhou Province, China. Through external morphological observation and genitalia dissection, a new species, *Mitjaevia duyunensis* Jiao, Yuan, Li & Song, **sp. nov.**, is described and illustrated.

Key words: Hemiptera; Taxonomy; Morphology; Erythroneurini

Introduction

The leafhopper genus *Mitjaevia* Dworakowska, 1970 belongs to the tribe Erythroneurini in Typhlocybinae (Hemiptera: Cicadellidae) (Dworakowska 1970, 1980), with *Erythroneura amseli* Dlabola, 1961 as the type species (Dlabola 1961). This genus is widely distributed across the Palaearctic and Oriental regions, and currently comprises 37 known species worldwide, reflecting a relatively high diversity in temperate and subtropical Asia (Chen *et al.* 2020; Chiang & Knight 1990; Dworakowska 1970, 1979, 1980, 1994; Dworakowska & Viraktamath 1975; Korolevskaja 1976; Lin *et al.* 2022; Luo *et al.* 2021, 2022; Mitjaev 1963; Sharma 1984; Song & Li 2014; Yang *et al.* 2025).

In this study, one new species, *Mitjaevia duyunensis* Jiao, Yuan, Li & Song, **sp. nov.**, is described and illustrated based on material collected in Dongshan Park, Duyun City, Guizhou Province, China. The new species can be readily distinguished from its congeners by a combination of external morphological characters and features of the male genitalia. Detailed descriptions, diagnoses, and illustrations are provided to facilitate identification and to improve our knowledge of the diversity of the Erythroneurini in southwestern China.

Materials and methods

Specimens examined in this study were collected by sweep net and preserved in absolute ethanol. Morphological terminology follows the definitions proposed by Dietrich (2005) and Song & Li (2014). Body length was measured from the apex of the vertex to the tip of the forewings. The abdomen was removed and immersed in a 10% sodium hydroxide (NaOH) solution, then heated for 1–2 minutes to clear the soft tissues. After clearing, the abdomen was rinsed with distilled water and transferred to glycerin for preservation. Dissection of the male genitalia was carried out in glycerin. Dissected genitalia and wing venation were observed and illustrated using an Olympus SZX16 stereomicroscope and an Olympus BX53 biological microscope. Habitus images of the specimens were captured

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with a Keyence VHX-5000 digital microscope. Multiple images were stacked to produce fully focused photographs, which were subsequently edited using Adobe Photoshop CS6. Hand-drawn line illustrations were prepared using Procreate software on an iPad. All examined specimens are deposited in the School of Karst Science, Guizhou Normal University, Guiyang, China (**GZNU**).

Taxonomy

Mitjaevia Dworakowska, 1970

Mitjaevia Dworakowska, 1970: 763; Mitjaev, 1969: 1045; Dworakowska & Viraktamath, 1975: 529; Korolevskaya, 1976: 41; Dworakowska, 1979: 44; Dworakowska, 1980: 179; Sharma, 1984: 33; Chiang & Knight, 1990: 221; Dworakowska, 1994: 119; Song, Li & Xiong, 2011: 26; Chen, Song & Webb, 2020: 32; Luo, Song & Song, 2021: 3; Lin & Zhang, 2022: 405; Luo, Wang & Song, 2022: 160, 162; Yang, Cao & Zhang, 2025: 335.

Type species. *Erythroneura amseli* Dlabola, 1961, by original designation.

Body slender, small. Ground color yellow to yellowish-brown. Head narrower than pronotum. Vertex slightly produced medially; coronal suture distinct, not reaching anterior margin; vertex with pair of triangular, quadrangular or nearly circular dark spots. Eyes grey to blackish. Boundary between vertex and face with four dark spots: two larger medially, one smaller on each side. Pronotum usually with numerous dark markings. Scutellum with basal triangles black or dark brown. Forewing pale yellow to orange, with dark patches; AA and AP veins visible or indistinct. Hind wing transparent.

Abdominal apodemes well sclerotized, broad and short, not exceeding 3rd sternite.

Male genitalia. Pygofer moderately sclerotized basally, dorsal and ventral margins usually membranous; basal lower angle and posterior margin with numerous short fine setae; dorsal pygofer appendage well sclerotized, movable, not exceeding posterior margin of pygofer; ventral appendage rarely present. Subgenital plate surpassing posterior margin of pygofer, broadened subbasally and narrowed towards apex (continuously broadened in some species); apex rounded, pointed or hooked; lateral margin usually with one to several rows of short, stout setae from subbase to subapex; 3–4 macrosetae present near midlength or subapically. Style with apex usually long and foot-like; preapical lobe distinctly enlarged. Connective lamellate, with distinct posterior stem and central anterior lobe. Aedeagal shaft tubular, preatrium well developed; with or without pair of processes; gonopore apical or subapical on ventral surface (Figs. 10, 11).

Distribution. Palaearctic and Oriental regions. Specific localities include: Afghanistan, Bangladesh, China (Guangxi, Guizhou, Henan, Shaanxi, Sichuan, Taiwan, Tibet, Xinjiang, Yunnan, Zhejiang), India, Kazakhstan, Kyrgyzstan, Pakistan, Russia, Tajikistan, Uzbekistan, Vietnam.

Key to males of *Mitjaevia* from China

1.	Pygofer lobe with ventral appendage	2
	Pygofer lobe without ventral appendage	7
2.	Aedeagal shaft with paired basal processes	3
	Aedeagal shaft without basal process	6
3.	Aedeagal basal processes very short, tooth-like	*M. quinquedentata*
	Aedeagal basal processes slender and elongate	4
4.	Aedeagal shaft with paired small triangular subapical processes	5
	Aedeagal shaft without apical or subapical process	*M. salaxia*
5.	Pygofer ventral appendage serrate at apex	*M. protuberanta*
	Pygofer ventral appendage acute at apex	*M. tridentata*
6.	Subapical processes of aedeagal shaft short, triangular	*M. circularis*
	Subapical processes of aedeagal shaft long, knife-like	*M. wangwushana*
7.	Aedeagus without process	8
	Aedeagus with processes	13
8.	Subgenital plate with 2–3 macrosetae	9
	Subgenital plate with more than 5 macrosetae	*M. tappana*
9.	Aedeagal shaft ventrally bulged below gonopore	*M. nanaoensis*
	Aedeagal shaft without ventral bulge	10

10. Aedeagal shaft acute at apex 11
Aedeagal shaft rounded at apex 12
11. Aedeagal shaft with dorsal margin nearly straight in lateral view, irregularly tapered distally . . . . . *M. duyunensis* **sp nov.**
Aedeagal shaft gradually tapered to acute apex in lateral view . . . . . *M. dworakowskae*
12. Style with apical part finger-like in dorsal view . . . . . *M. korolevskayae*
Style with apical part foot-like in dorsal view . . . . . *M. shibingensis*
13. Aedeagus with preatrial process 14
Aedeagus without preatrial process 15
14. Aedeagal shaft with paired small apical processes . . . . . *M. bijiensis*
Aedeagal shaft without apical process . . . . . *M. bisecta*
15. Aedeagal shaft with apical process 16
Aedeagal shaft without apical process 20
16. Aedeagal shaft with paired slender processes basally 17
Aedeagal shaft without slender process basally 18
17. Apical processes of aedeagus asymmetric . . . . . *M. ramosa*
Apical processes of aedeagus asymmetric . . . . . *M. diana*
18. Aedeagal shaft with paired lamellate processes on ventral side 19
Aedeagal shaft without lamellate process on ventral side . . . . . *M. acrodonta*
19. Aedeagal shaft concave apically in caudal view . . . . . *M. turgida*
Aedeagal shaft truncate apically in caudal view . . . . . *M. lamelliformis*
20. Subgenital plate with a sharp subapical protrusion 21
Subgenital plate rounded at apex, without subapical protrusion 23
21. Aedeagal shaft with an asymmetric process on dorsal side . . . . . *M. asymmetrica*
Aedeagal shaft without process on dorsal side 22
22. Aedeagal shaft with paired slender processes on ventral side . . . . . *M. aurantiaca*
Aedeagal shaft with single slender process on ventral side . . . . . *M. solitaria*
23. Aedeagus with paired dorsal processes . . . . . *M. bifurcata*
Aedeagus without dorsal processes 24
24. Aedeagal shaft distinctly shorter than preatrium 25
Aedeagal shaft subequal in length to preatrium 26
25. Connective with central lobe; aedeagal shaft tapering to apex in caudal view . . . . . *M. gracilis*
Connective without central lobe, aedeagal shaft widened subapically in caudal view . . . . . *M. subtilis*
26. Aedeagal shaft curved dorsad . . . . . *M. xinjiangensis*
Aedeagus nearly straight or slightly curved ventrad 27
27. Aedeagal basal processes separated from shaft in caudal view . . . . . *M. flexuosa*
Aedeagal basal processes closely attached to shaft in caudal view . . . . . *M. mianningensis*

Mitjaevia duyunensis Jiao, Yuan, Li & Song, sp. nov.

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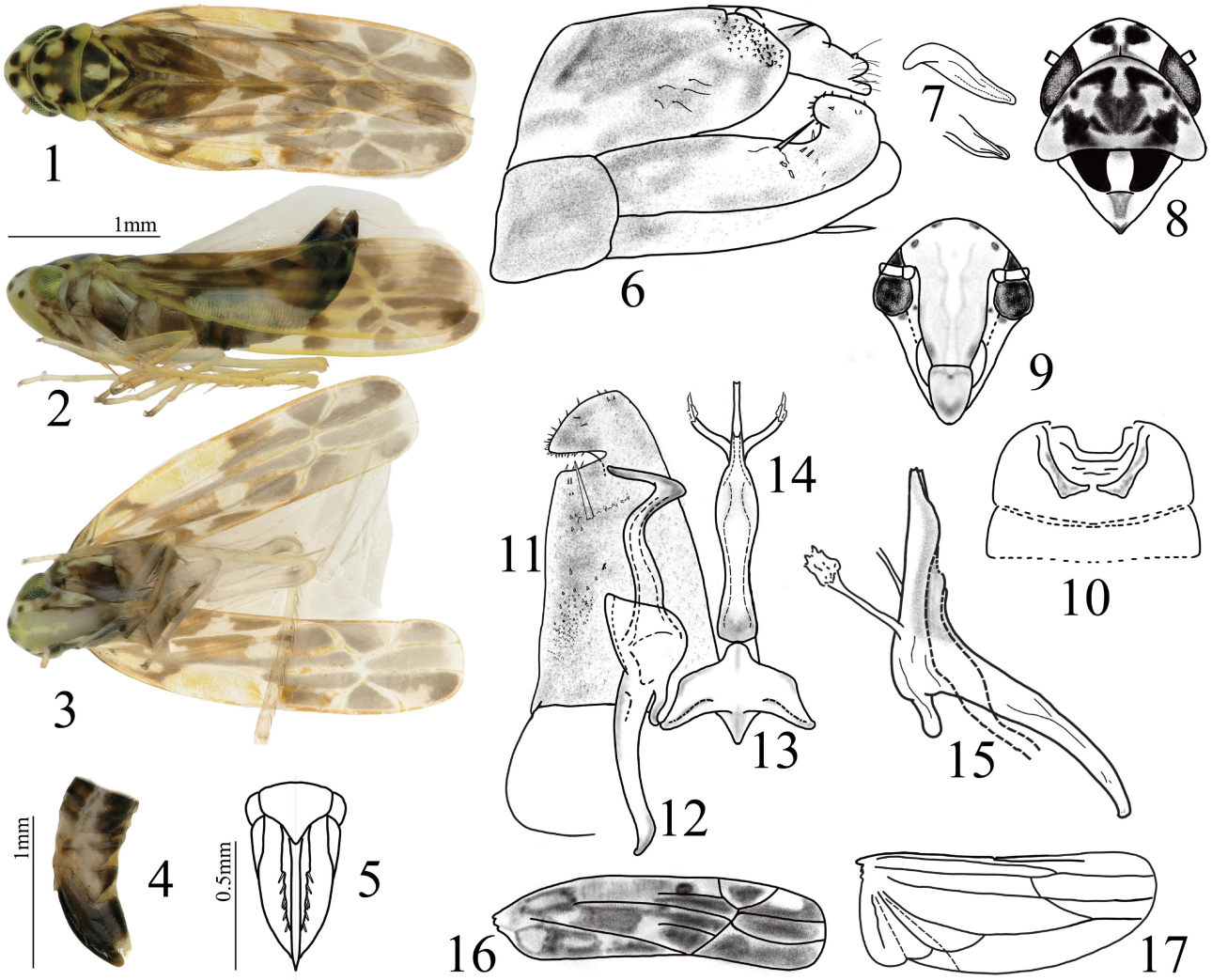
(Figs 1−17)

Description. Vertex yellowish, with pair of large subquadrate black spots medially; coronal suture dark, extending to one-third length of vertex (Fig. 1). Face milky yellow; frontoclypeus with central area milky yellow, lateral areas milky white; lorum and anteclypeus with greyish-brown patches (Figs 2, 3, 9). Eyes blackish-brown, tinged with yellowish-green (Figs 1–3). Pronotum milky yellow, with pair of symmetrical C-shaped blackish-brown patches medially (Figs 1, 8). Scutellum milky yellow, with basal lateral angles dark brown; transverse impression slightly curved, dark; triangular dark brown patch extended from transverse impression towards apex (Figs 1, 8). Forewing cells mostly gray, veins white, wax-field milky yellow (Figs 1, 2, 16). Hind wing with vein RA present (Fig. 17).

Abdomen. Abdominal apodemes small, well sclerotized, not exceeding posterior margin of 3rd sternite (Fig. 10).

Male genitalia. Pygofer lobe with several microsetae scattered on ventro-basal area and dense microtrichia on dorsal margin (Fig. 6); dorsal appendage narrowing from base to apex, apex pointed (Fig. 7). Subgenital plate with sharply recurved apex bearing fine setae; lateral margin with three macrosetae at midlength; surface densely covered with fine microtrichia (Fig. 11). Style apex elongate, slender, sinuate distally with apex slender and sharply curved laterad, preapical lobe well developed, distinctly wider than style shaft (Fig. 12). Aedeagal shaft nearly straight and irregularly tapered distally in lateral view, slender in ventral view, gradually tapered to apex, apex slightly notched; gonopore opening near midlength on ventral surface; dorsal apodeme indistinct, connected to dorsal appendage by ligaments; preatrium slender and evenly tapered toward base in lateral view, slightly broadened basally in ventral view (Figs 14, 15). Connective broad, manubrium short, lateral arms robust, central lobe triangular (Fig. 13).



FIGURES 1–17. ***Mitjaevia duyunensis*** **Jiao, Yuan, Li & Song, sp. nov.**: 1. Habitus, dorsal view; 2. Habitus, lateral view; 3. Habitus, ventral view; 4. Female pygofer, ventro-lateral view; 5. Female genitalia, ventral view; 6. Male genital capsule, lateral view; 7. Dorsal pygofer appendage, lateral view; 8. Head and thorax, dorsal view; 9. Face, ventral view; 10. Abdominal apodemes; 11. Subgenital plate; 12. Style; 13. Connective; 14. Aedeagus, ventral view; 15. Aedeagus, lateral view; 16. Forewing; 17. Hind wing.

Measurements. Male: 2.8–2.9 mm; female: 3.0–3.1 mm.

Material examined. *Holotype*: ♂, China: Guizhou Province, Duyun City, Dongshan Park, sampling plot YB11-dongshanD3-1x, 107°31′56″E, 26°15′48″N, 960 m, 16 August 2024, coll. Xiaojuan Yuan. *Paratype*: 1♀, same data as holotype.

Remarks. This new species is similar to *Mitjaevia dworakowskae* Chen, Song & Webb, 2020 and *Mitjaevia shibingensis* Chen, Song & Webb, 2020 in external morphology, but can be distinguished by the following characters: preatrium slender, without processes on the dorsal apodeme, with base slightly expanded in ventral view; gonopore opening subapically; subgenital plate lacking stout setae along the median margin. The style is similar to that of *M. dworakowskae*, but differs in having a longer preapical extension, a well-developed anterolateral lobe, and a more distinctly curved neck.

Etymology. The specific epithet is derived from the name of the type locality, Duyun City, Guizhou Province, China.

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