# A new genus of Ledrinae (Hemiptera: Cicadellidae) from Yunnan, China

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**Abstract:** A new genus *Paratituria* **gen. nov.** of the tribe Ledrini is described based on a new species, *Paratituria nangunhensis* **sp. nov.** from Yunnan, China as its type species. Descriptions, illustrations and the sequence of the mitochondrial gene *cytochrome c oxidase subunit I* (*COI*) are provided.

**Key words:** Auchenorrhyncha; Cicadomorpha; Ledrinae; taxonomy

**中国云南耳叶蝉亚科一新属（半翅目：叶蝉科）**

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**摘要：**以中国云南 1 新种南滚河拟角胸叶蝉 *Paratituria nangunhensis* **sp. nov.**为模式种建立耳叶蝉族 1 新属：拟角胸叶蝉属 *Paratituria* **gen. nov.**，并附有描记、图片及线粒体基因细胞色素 c 氧化酶亚基 I 序列。

**关键词：**头喙亚目；蝉次目；耳叶蝉亚科；分类

## Introduction

Ledrinae is a subfamily of leafhoppers with moderately diverse and unique morphology, mainly feeding on trees and shrubs. Currently, 5 tribes, 46 genera and more than 360 species are known worldwide (Jones & Deitz 2009; Viraktamath *et al*. 2021; Li *et al*. 2023; Wang *et al*. 2024). Ledrinae distribute across all zoogeographic regions with the Oriental region having the highest species diversity.

The tribe Ledrini is the largest tribe of this subfamily, with more than 300 species belonging to 38 genera worldwide. China is a major distribution area of Ledrini in the world, with more than 180 species of 27 genera being reported so far (Li *et al*. 2023; Wang *et al*. 2024). Ledrini can be distinguished from other tribes by the following characteristics: dorsum densely pitted or knobbed, head spatulate and lamellate, face generally concave, episternum of pronotum entirely exposed, forewings punctate, venation reticulate in apical two-thirds,

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mesothoracic tibia row II apex with long triangular patch of scalelike setae sometimes arranged in row perpendicular to axis of leg (Jones & Deitz 2009). Within Ledrini, only the genera *Macrotrichia* Zhang, Sun & Dai, 2009, *Neotituria* Kato, 1932, *Porcorhinus* Goding, 1903 and *Tituria* Stål, 1865 have the humeral angles of the pronotum strongly extended laterad. Here, we report a new ledrine genus from China which is similar to the genera mentioned above in having protruded pronotal humeral angles, but the shape of the thorax is very distinctive and other aspects of the external morphology also differ from those of previously described genera. A diagnosis, descriptions and illustrations are provided. In addition, the DNA barcode region of the the mitochondrial gene *cytochrome c oxidase subunit 1* (*COI*) of the type specimen was sequenced and uploaded to GenBank.

## Material and methods

The type specimen was preserved in anhydrous ethanol and deposited in the Entomological Museum of Northwest A&F University (NWAFU), Yangling, Shaanxi, China. Specimen photographs were taken using an advanced Stereo Microscope System (Discovery V20, Zeiss; CCD, AxioCam ICc5, Zeiss and Leica 205C). Zen pro was used to stack photographs taken at different focal planes. Final integration and labelling of images were done using Adobe Photoshop. A Motic SMZ-168 stereo microscope was used for observation. Morphological terminology follows Zhang (1990) and Dietrich (2005).

The total genomic DNA was extracted from the abdomen using TIANamp Genomic DNA Kit following manufacturer protocols except incubation time was increased to 48 hours to maximize yield. After DNA extraction, the abdomen was rinsed 2–3 times in distilled water and then preserved in glycerol. *COI* gene was amplified using the primers and amplification procedure of Feng & Zhang (2017), then sequenced by Tsingke Biotechnology Co., Ltd. Geneious 8.1.3 was used for checking and editing the sequence.

## Taxonomy

### *Paratituria* Li & Cao gen. nov.

Type species. *Paratituria nangunhensis* Li & Cao **sp. nov.**

Description. Dorsum yellowish brown, pronotum with lateral and posterior margins dark brown. Face yellow.

Medium-sized and robust. Head broad and narrower than pronotum. Crown pentagonal with posterior margin widest, coronal suture prominent, shorter than width between eyes, in lateral view sloping slightly downward. Ocelli near crown posterior margin and closer to each other than to eyes. Face with antennal cavities shallow; frontoclypeus one third as wide as distance between eyes, with anterodorsal longitudinal carina; anteclypeus broadest basally, gena flattened, lorum suture distinct, lorum narrow and beyond clypeal suture. Pronotum broad and punctured, more than twice as wide as median length, anterior half slightly foveate on both sides near lateral margin, posterior half gibbous, anterior margin convex, posterior margin concave, humeral angles strongly protruded, forming distinct finlike projections

directed dorsolaterad. Mesonotum and scutellum flat and triangular, narrower than pronotum, without elevated crest-like process. Scutoscutellar suture distinct and short, not reaching lateral margin. Forewing narrow and darkly punctured, slightly longer than abdomen, with extra r-m and m-cu cross veins apically; appendix absent. Hind wing venation complete. Fore and middle legs without conspicuous setae. Hind femoral distal chaetotaxy 2 + 0, hind tibia slender and cylindrical, posterodorsal row with 4 macrosetae with prominent angular bases, anteroventral setae shorter and finer.

Male genitalia. Pygofer cylindrical, with small process on posterodorsal margin; ventral process short and stout, arising from ventroposterior margin, directed dorsad. Subgenital plate lamellate, narrow and long, extended well beyond pygofer side in lateral view. Style widened medially, curved ventrally near apex, with group of microsetae subapically. Connective T-shaped, with median lobe and dorsomedian prominent keel, fused with the base of aedeagus. Aedeagus dorsal apodeme triangular; shaft tubular, curved dorsally, with pair of preapical processes. Segment X with ventroposterior extension.

Etymology. The new genus is named based on its external similarity to the genus *Tituria* Stål.

Remarks. *Paratituria* **gen. nov.** is similar to *Tituria* and *Macrotrichia* in having distinct angular projections on the pronotum and will run to *Tituria* in the key of Wang *et al*. (2024). But it can be distinguished by the following characters: the pronotum has two regions near the anterior margin foveate and the posterior region gibbous, the humeral projections are more prominent and directed dorsolaterad; the hind femur distal chaetotaxy is 2 + 0, and the male subgenital plate is considerably longer than the pygofer. In the other two mentioned genera, the pronotum is almost flat, with the angular projections directed laterad, the hind femur distal chaetotaxy is 2 + 1, and the subgenital plate extends only slightly beyond the pygofer apex. The male genitalia of the monotypic genera *Neotituria* and *Porcorhinus* have not been described, but the former is externally similar to *Tituria* and both differ from *Paratituria* in having the head much more strongly produced, with the crown distinctly parabolic and nearly as long as or longer than its width between the eyes; the latter has the humeral angles of the pronotum directing dorsolaterad as in the new genus, but it can be distinguished with the new genus by humeral angles extending upward, the elongated head and the strongly concave hind margin of the pronotum.

Distribution. China.

***Paratituria nangunhensis* Li & Cao sp. nov.** (Figs. 1, 2)

Description. Crown yellowish brown with margin narrow black band, posterior region with slightly darker marking; ocelli and eyes black (Figs. 1A, 1B). Face yellow (Fig. 1C). Pronotum reddish brown, lateral and posterior margins black, humeral projections with dark brown markings extending onto ventral surface; anterior and posterior margins each with a medial black spot, anterior half with 4 black dots in rectangular arrangement. Scutellum paler yellow (Figs. 1A, 1B). Forewing hyaline with brownish tinge, with a small black area at bifurcation of R and M veins, connection of M and first rm, middle Cu vein and subterminal A2 vein, respectively (Fig. 1D), inner margin with narrow black band.

Crown about 0.35 times as long as width between eyes, lateral margins straight in front

of eyes and then progressively convergent apically, anterior margin obtuse angulate, deflected slightly downwards over face, anteromedial part slightly foveate on both sides of coronal suture. Pronotum about 1.49 times as long as crown, anterior half slightly punctured, posterior region gibbous, humeral projections in lateral view extended distinctly above dorsomedial surface of pronotum, curved obliquely posterad. Mesonotum smooth, shorter than pronotum (Fig. 1A). Forewing densely punctate (Fig. 1D).

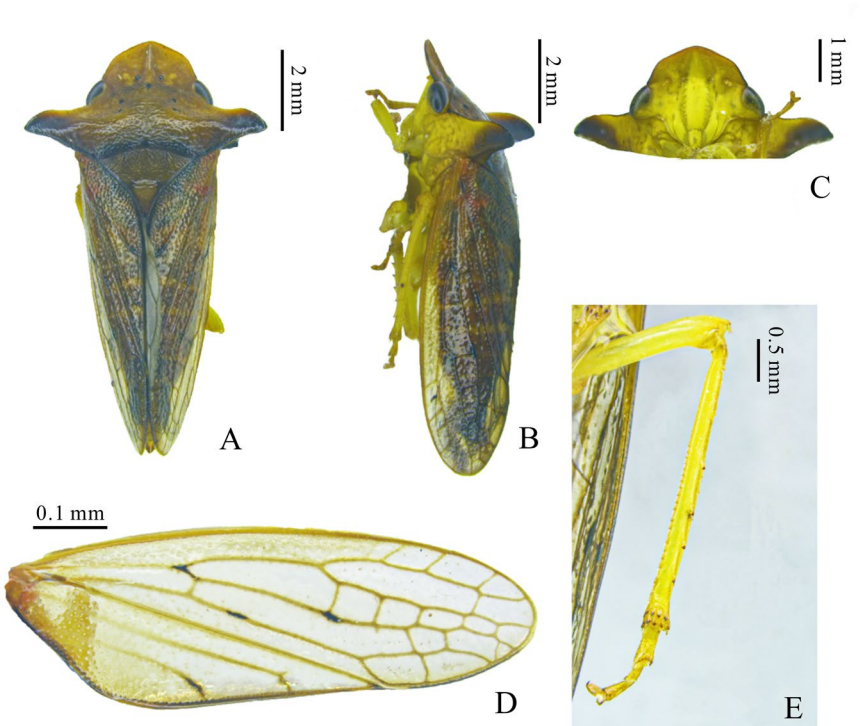


Figure 1. *Paratituria nangunhensis* **sp. nov.** A, B. Habitus, dorsal and lateral views; C. Face; D. Forewing; E. Hide femora and tibia.

Pygofer side nearly rectangular, anterior area slightly broader than posterior area, bluntly rounded at distal end with small papillae, dorsal margin with a spiniform process near apex; ventral process hook-like and short, somewhat stout, arising from near terminal of ventral margin, curved posterad but not surpassing pygofer margin (Figs. 2A, 2B). Subgenital plates broadened subbasally and slightly constricted medially, rounded distally, with numerous ventral small setae in distal quarter (Figs. 2A, 2C). Style widened medially and gradually narrowed towards apex, apex curved ventromesad, with small preapical setae (Figs. 2D, 2E). Connective short, wider than long (Figs. 2D, 2F). Aedeagus with well-developed dorsal apodeme, shaft long, curved dorsally with a pair of elongate processes arising preapically and extended distad well beyond apex of aedeagus; gonopore apical (Figs. 2G–I). Segment X extended beyond pygofer apex (Fig. 2A).

Measurements. Length including forewing 10.6 mm, head 3.2 mm wide including eyes, pronotum 6.2 mm wide across humeral processes.

**Holotype.** ♂, **China**, Yunnan, Nangunhe National Nature Reserve, Wending village,

1,551 m, 30-IX-2024, coll. Rongrong LI.

Etymology. The species name is derived from the type locality.

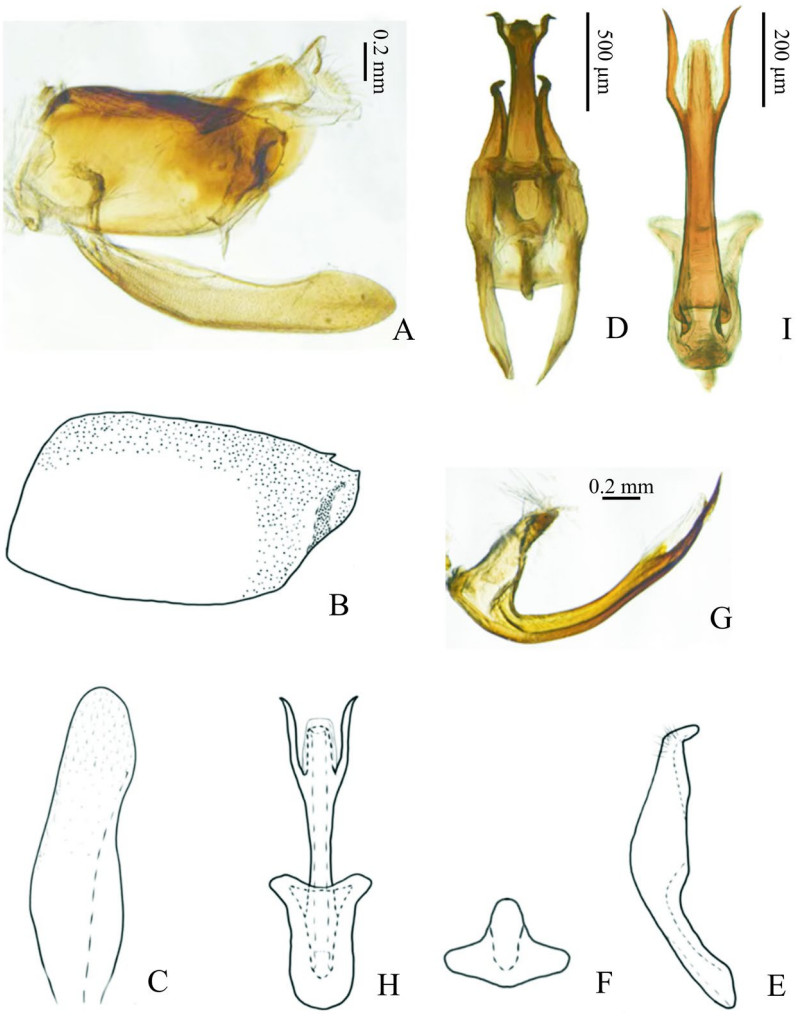


Figure 2. Male genitalia of *Paratituria nangunhensis* **sp. nov.** A. Genital capsule, lateral view; B. Pygofer side, lateral view; C. Subgenital plate; D. Aedeagus, connective and style, dorsal view; E. Style, lateral view; F. Connective, ventral view; G–I. Aedeagus, lateral, anterior and posterior views.

DNA barcode and remarks. The *COI* sequence of the holotype was uploaded to the Nucleotide database of GenBank (accession number: PV022472). Blast search against the Nucleotide database of GenBank on March 28, 2025 indicates the *COI* sequence of the new species is most similar to the *COI* sequence of *Tituria sagittata* Cai & Shen, 1999 (NC_051528.1) with a similarity of 92%, but the new species differs from *T. sagittate* in having more protruded humeral angles of the pronotum, more or less rectangular pygofer side and much slimmer aedeagal shaft.

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