



Validating *Homogryllacris eremna* and establishing *H. unicolor* as a synonym of *H. anelytra*, with description of the female of *H. ascenda* (Orthoptera: Gryllacrididae)

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Abstract

In a recent study by Duan *et al.* (2025), the new species *Homogryllacris eremna* was proposed and *H. unicolor* Lu, Zhang & Bian, 2022 was suggested as a synonym of *H. anelytra* Shi, Guo & Bian, 2012. However, as the corresponding descriptions and diagnoses were provided solely in supplementary files, these names fail to meet the availability requirements of the International Code of Zoological Nomenclature (ICZN). To resolve it, this study provides the necessary information through formal publication to validate these taxonomic acts. First, a complete morphological description is provided and type specimens are designated for *H. eremna*, thereby making the name available. Second, based on integrated molecular and morphological evidence, *H. unicolor* is formally established as a synonym of *H. anelytra*. Additionally, the female of *H. ascenda* Shi, Guo & Bian, 2012 is reported and described for the first time.

Key words: *Homogryllacris*, Gryllacrididae, Orthoptera, new species, China

Introduction

The genus *Homogryllacris* Liu, 2007 is widely studied within the family Gryllacrididae (Cigliano *et al.*, 2026). Recently, Duan *et al.* (2025) published an integrative taxonomic study on this genus in *Zoologica Scripta*, reconstructing its phylogenetic relationships based on multiple gene datasets and exploring its biogeographic history and wing evolution patterns. The study identified a new species, *Homogryllacris eremna*, and proposed synonymizing *H. unicolor* Lu, Zhang & Bian, 2022 with *H. anelytra* Shi, Guo & Bian, 2012, based on molecular and morphological evidence.

However, from a nomenclatural perspective, a critical issue exists. The detailed morphological description, diagnosis, and type specimen information for the new species *H. eremna*, along with the morphological comparisons supporting the synonymy of *H. unicolor* with *H. anelytra*, were all placed in supplementary material titled “File S1”. This file was published online solely in an editable Word document format. According to the currently effective International Code of Zoological Nomenclature (ICZN, 4th Edition and its amendments), the “valid publication” of a name must satisfy specific “promulgation” criteria. Article 8.1.3.2 explicitly states that documents published only in easily alterable electronic formats (e.g., .doc, .docx) do not meet the requirement of permanence. As “File S1” in the original paper failed to comply with these provisions, its content is legally regarded as “unpublished.” Consequently, although its scientific content is valuable, the proposed new species name *H. eremna* lacks a description in a valid publication and thus constitutes a nomen nudum; the proposed synonymy is also invalid, as it was not formally presented in a qualifying publication.

To rectify this nomenclatural oversight, to grant formal validity to taxonomically evidenced conclusions, and to prevent future confusion arising from the use of these unavailable names, this study was conducted. Additionally, during the examination of museum specimens, we discovered the female of *H. ascenda* Shi, Guo & Bian, 2012 for the first time. Their description will serve as an independent supplement in this paper to enhance the morphological information of this species. All specimens are deposited in the Museum of Hebei University (MHU).

Morphological images were acquired using Leica M205A digital imaging system. The following conventions were adopted for the specimen measurements: BL: body length—the distance from apex of fastigium verticis to posterior margin of ninth abdominal tergite; TL: tegmen length—the distance from base of tegmen to apex; PL: pronotum length—the distance from anterior margin of pronotum to the posterior margin; HFL: hind femur length—the distance from base of hind femur to the apex of genicular lobe; OL: ovipositor length—the distance from the base of subgenital plate to the apex of ovipositor. Nomenclature of the tegminal veins follows Ingrisch (2018).

Taxonomy

Homogryllacris eremna Duan, Duan & Shi sp. nov.

Chinese name 黑体同蟋螽

(Figure 1)

Description. General. Body medium-sized for this genus. Fastigium verticis about two times as broad as scape, apex truncate (Fig. 1C). Eyes ovoid, ocelli indistinct, oval (Fig. 1A–B). Pronotum subquadrate, anterior margin slightly protruding forward, posterior margin almost straight (Fig. 1B–C). Lateral areas of second and third abdominal tergites each with two rows of stridulatory pegs. Tegmina reaching anterior margin of first abdominal tergite, hind wings slightly longer than tegmina (Fig. 1B).

Legs. Fore coxa with a spine. Fore and middle femora unarmed on ventral surfaces; fore and middle tibiae with 4 pairs of long spines and a pair of short apical spurs on ventral surfaces respectively. Hind femur with 4–7 inner spines and 3–6 outer spines on ventral surface; hind tibia with 5 spines on both sides of dorsal surface, with a pair of apical spurs on dorsal surface; ventral surface with a long apical spur on inner margin, near basal area strongly curved dorsad, while outer margin with 2 apical spurs, with a pair of pre-apical spurs.

Male. Genitalia. Ninth abdominal tergite slightly curved ventrad. Tenth abdominal tergite narrow and short, the middle of posterior margin with a pair of long processes which crossed near base and pointed outwards, the middle area of these processes markedly stout, apical halves incurved throughout, apices observably sclerotized and curved ventrad, tips acute (Fig. 1D–F). Cerci relatively short, apices rounded. Subgenital plate subquadrate, the middle of anterior margin covered by the previous abdominal tergite, posterior margin with a wide triangular notch, subapices of lateral lobes slightly concave, while apices rounded and protruding backwards (Fig. 1D–E). Styli cylindrical and long, apices rounded, inserted on lateral margins of subapical area of subgenital plate.

Coloration. Body dark brown. Fastigium verticis and occiput with broad and irregular dark brown stripe, frons with two dark brown spots (Fig. 1C). Eyes black, lamellar uplift on inner margin of antennal scrobe black (Fig. 1A–C). Pronotum with black rim, disc almost dark brown but lateral lobes light (Fig. 1B–C). Tegmen with dark brown veins. Mesonotum, metanotum and dorsal surface of abdomen black. All spines and spurs of legs dark brown.

Female. Body larger than male, see below. Subgenital plate nearly trapezoidal, basal area broad, then narrowing, basal half with thin transverse folds, apical half marked narrower, posterior margin faintly concave (Fig. 1H). Ovipositor thin and long, straight, dorsal and ventral margins almost parallel, apex broken (Fig. 1G).

Material examined. Holotype. ♂, Liupanshui Minghu National Wetland Park, Zhongshan, Guizhou, 10-VIII-2024, Haishu Liao (sweep net). Paratype. 1♀, Jingan, Dagan, Yunnan, 17-VII-2024, Haishu Liao (sweep net).

Measurements. BL: ♂13.7, ♀20.6; PL: ♂2.8, ♀4.0; TL: ♂2.1, ♀3.1; HFL: ♂8.9, ♀10.5; OL: 18.2.

Remark. Duan *et al.* (2025) conducted a molecular phylogenetic analysis of this species and provided its type specimen information and morphological description in an appendix. However, since the appendix was presented in a non-formally published DOCX format document, the species name is considered a nomen nudum. Here, we provide a formal description to validate the name in accordance with the International Code of Zoological Nomenclature (ICZN).



FIGURE 1. *Homogryllacris eremna* Duan, Duan & Shi **sp. nov.**, A. head in fore view; B–C. head and pronotum: B. lateral view; C. dorsal view. D–F. apex of abdomen: D. apical view; E. ventral view; F. latero-apical view. G. ovipositor in lateral view; H. subgenital plate in ventral view. A–C, G–H: female; D–F: male.

The new species differs from the known species of the genus by the middle of male tenth abdominal tergite posterior margin with a pair of long processes which crossed near base and pointed outwards, apical halves incurved throughout, apices observably sclerotized and curved ventrad, tips acute.

Four molecular species delimitation methods were employed: Assemble Species by Automatic Partitioning (ASAP), Java Molecular Operational Taxonomic Units (jMOTU), the General Mixed Yule Coalescent model (GMYC), and the Bayesian implementation of the Poisson Tree Processes model (bPTP). All four molecular delimitation analyses based on the *COI* gene congruently assigned the holotype and paratype specimens from distinct geographic origins to the same Molecular Operational Taxonomic Unit (MOTU).

Etymology. The name of this new species is derived from the dark pronotum, the Greek "eremn-" means black.

Distribution. China (Guizhou, Yunnan).

***Homogryllacris anelytra* Shi, Guo & Bian, 2012**

(Figure 2)

Homogryllacris anelytra Shi, Guo & Bian, 2012: 60.

Homogryllacris unicolor Lu, Zhang & Bian, 2022 **syn. nov.**



FIGURE 2. *Homogryllacris anelytra* Shi, Guo & Bian, 2012: male abdominal apex: A–C, G. specimen from Lvchun, Yunnan; D–F, H. specimen from the type locality (Jingdong, Puer, Yunnan) of the species; A, D. dorsal view; B, E. apical view; C, F. ventral view. G–H. lateral view.

Material examined. Holotype: ♂, Jingdong, Puer, Yunnan. 1♂1♀, Huanglianshan, Lvchun, Yunnan, 24 July, 2022, Yanhao Duan; 1♂, Jingdong, Puer, Yunnan, 4 August, 2022, collected by Jie Su; 2♂1♀, Jingdong, Puer, Yunnan, 10 September, 2020, collected by Peng Cui; 1♂, Xinpingshan, Yuxi, Yunnan, 21 September, 2021, collected by Shengchuan Yang.

Remark. Similarly, the treatment of synonymy proposed for this species by Duan *et al.* (2025) is also nomenclaturally unavailable, as it was not formally published in a qualified publication. Lu *et al.* (2022) described *Homogryllacris unicolor* Lu, Zhang & Bian, 2022, and noted it resembles *H. anelytra* except for the abdominal coloration patterns. We examined the topotypes of *H. unicolor* and *H. anelytra*. Based on four molecular delimitation methods, *H. unicolor* and *H. anelytra* were consistently placed within the same MOTU. Consequently, based on combined morphological and molecular evidence, this study proposes *Homogryllacris unicolor* Lu, Zhang & Bian, 2022 is a synonym of *H. anelytra* Shi, Guo & Bian, 2012.

Distribution. China (Yunnan).

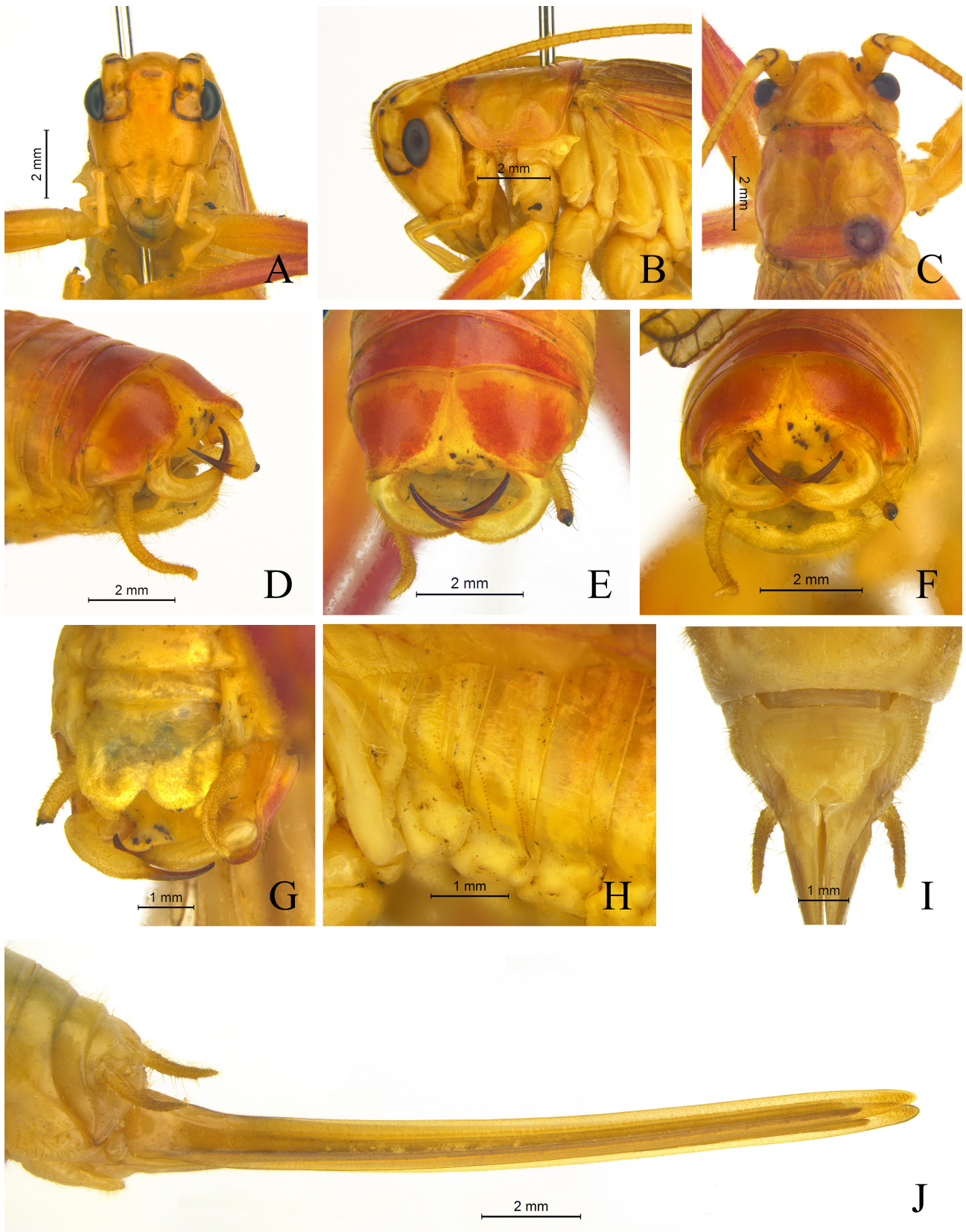


FIGURE 3. *Homogryllacris ascenda* Shi, Guo & Bian, 2012. A–C. head and pronotum: A. face; B. lateral view; C. dorsal view. D–G. apex of abdomen in dorsal view; D. latero-apical view; E. dorsal view; F. apical view; G. ventral view. H. stridulatory pegs on second and third abdominal tergites; I. ventral view; J. ovipositor in lateral view. male: A–H; female: I–J.

Homogryllacris ascenda Shi, Guo & Bian, 2012

(Figure 3)

Homogryllacris ascenda Shi, Guo & Bian, 2012, *Zootaxa*, 3414: 63.

Holotype: male; type locality: Dashahe, Daozhen, Guizhou.

First description of the female. Wings almost reaching apical areas of hind femora. Tegmen: R releases Rs before mid-length of tegmen, both forked near apical area; MA divides into MA and MP about mid-length of tegmen; CuA and CuP undivided, free throughout; with 3 anal veins. Subgenital plate slightly broad at base, apical half narrowing, basal area membranous with some transverse folds, posterior margin with a pronounced concavity. Ovipositor almost equal to body length, nearly straight, dorsal and ventral margins nearly parallel, apex rounded.

Coloration. Body light yellow (after alcohol immersion). Antennal sockets, base and apex of scape, base of pedicel, and fastigium of vertex with blackish spots; ocelli pale yellow; eyes and inner margin of mandibles black. Pronotum with pale red marks. Veins on tegmina purplish red, cells hyaline. Apical part of processes on male tenth abdominal tergite brown.

Measurements (mm). BL: ♂16.8–18.5, ♀26.6; PL: 4.3–4.5, ♀5.0; TL: ♂15.3–15.5, ♀17.0–17.1; HFL: 10.0–11.0, ♀12.5–12.7; OL: 16.4.

Material examined. Holotype: ♂, Dashahe, Daozhen, Guizhou, 17 August, 2004, collected by Fuming Shi. ♀, Kuankuoshui, Suiyang, Guizhou, 18 July, 2023, collected by Tao Wang; ♂, Kuankuoshui, Suiyang, Guizhou, 14 August, 2024, collected by Wenqing Lv.

Distribution. China (Guizhou).

Remark. The female of this species was previously unknown. Here we provide its first description, with the association of sexes based on molecular evidence (Duan *et al.*, 2025).

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