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Revision of the genus *Velarifictorus* Randell, 1964 from China (Orthoptera: Ensifera: Grylloidea: Gryllidae: Gryllinae: Gryllini)

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Abstract. The genus *Velarifictorus* Randell, 1964 comprises 113 species worldwide, including 19 species or subspecies recorded from China prior to this study. In this study, we systematically revise the taxonomy of 13 species from China based on morphology. We redescribe nine species (*V. agitatus* Ma, 2019, *V. aspersus* (Walker, 1869), *V. bannaensis* Zhang, Liu & Shi, 2017, *V. beybienkoi* Gorochoy, 1985, *V. dianxiensis* He, 2018, *V. flavifrons* Chopard, 1966, *V. micado* (Saussure, 1877), *V. ornatus* (Shiraki, 1911), *V. zhengi* Zheng & Ma, 2022), report two new species records to China, *V. brunneri* (Chopard, 1969), *V. triangularis* Ingrisch, 1998, and propose the synonymization of two species or subspecies, *V. agitatus minutus* Ma, 2019 syn. nov. and *V. ryukyuensis* Oshiro, 1990 syn. nov. A key to the Chinese species of *Velarifictorus* is provided.

Keywords. Chinese fighting cricket, Japanese burrowing cricket, new record, synonym, taxonomy.

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Introduction

The genus *Velarifictorus* Randell, 1964, belonging to the subfamily Gryllinae Laicharting, 1781, is widely distributed across Asia, Africa, Oceania, and North America. Its tribal classification within Gryllinae has been subject to debate. Some authors place it within the tribe Modicogryllini Otte & Alexander, 1983 (Otte & Alexander 1983; Otte & Cade 1983; Ingrisch 1998; Kim 2013; Tan *et al.* 2015; Chen *et al.* 2018), while others place it within a broadly defined Gryllini Laicharting, 1781 which includes a subtribe Modicogryllina Otte & Alexander, 1983 (Gorochoy 2001; Storozhenko *et al.* 2015; Mulder & Gorochoy 2019). Recent molecular studies indicate that all analyzed samples of Modicogryllini form

a monophyletic group, which is nested within the group Gryllini (Jing *et al.* 2025). Consequently, Modicogryllini may be more appropriately treated as a subtribe of Gryllini. However, given the absence of clear morphological distinctions between Modicogryllini and other tribes or subtribes in previous studies, the genus *Velarifictorus* is assigned to Gryllini in our study. The genus currently comprises 113 species and is divided into three subgenera: the nominotypical subgenus, *Buangina* Otte & Alexander, 1983, and *Pseudocoiblemmus* Gorochov, 2001, which are primarily distinguished by cephalic morphology and the structure of the male epiphallus (Cigliano *et al.* 2025; Di *et al.* 2025). The nominotypical subgenus, distributed throughout Asia, Africa, Oceania, and North America, has a rounded head and a typical medial process of the male epiphallus (Randell 1964; Gorochov 2001). The subgenus *Buangina*, found mainly in Oceania, also has a rounded head, but features a somewhat elongated and relatively elevated medial process of the male epiphallus (Otte & Alexander 1983). The subgenus *Pseudocoiblemmus*, distributed mainly in South Asia, is distinguished by an oblique head shape and a relatively small, ventrally directed medial process of the male epiphallus (Gorochov 2001; Tan *et al.* 2015).

In China, all recorded species of *Velarifictorus* belong to the nominotypical subgenus, and are predominantly found in the southern regions (Fig. 1). Research on the Chinese fauna has progressed over several decades for this genus. Early contributions include: Woo *et al.* (1992), who documented *V. khasiensis* Vasanth & Ghosh, 1975 in Fujian and other regions. Yin & Liu (1995) researched Chinese species of *Velarifictorus*, transferred *Modicogryllus arisanicus* (Shiraki, 1930) to *Velarifictorus* as *V. arisanicus* (Shiraki, 1930), and updated the species number to nine. Woo & Wang (1999) recorded *V. ryukyuensis* Oshiro, 1990 as a new record for Fujian Province. More recently, Gorochov (2001) synonymized *V. yunnanensis* Liu & Yin, 1993 with *V. flavifrons* Chopard, 1966. Xie (2004) described a new species *V. curvinervis* Xie, 2004 from the Shiwandashan region of Guangxi. Zhang *et al.* (2017) described a new species, *V. bannaensis* Zhang, Liu & Shi, 2017 from Yunnan Province. Chen *et al.* (2018) reviewed the common species of *Velarifictorus* in China, concluded that *V. hemelytrus* reported in Yin & Liu (1995) was a misidentification of *V. ornatus* and described a new species, *V. dianxiensis* He, 2018 from Yunnan Province. Ma (2019a, 2019b), Ma *et al.* (2019), Zheng *et al.* (2022) and Wang *et al.* (2023) described five new species, enriching the diversity of Chinese species of *Velarifictorus*. Di *et al.* (2025) described two new species from Yunnan. Prior to this study, 19 species or subspecies of *Velarifictorus* have been recorded in China (Gorochov 1985; Woo *et al.* 1992; Yin & Liu 1995; Xie 2004; Zhang *et al.* 2017; He 2018; Chen *et al.* 2018; Ma 2019a, 2019b; Ma *et al.* 2019; Zheng *et al.* 2022; Zhao & Liu 2022; Wang *et al.* 2023; Di *et al.* 2025).

However, despite the increasing number of described species, the current taxonomy, which relies heavily on fragmented morphological characters, has led to blurred species boundaries and synonymy issues. This situation severely impedes accurate assessments of species diversity, reliable inferences of biogeographic patterns, and subsequent research in conservation genetics and evolutionary biology. Therefore, a comprehensive systematic revision at the genus level is an indispensable foundation for all future in-depth studies.

To address these issues and update the species inventory, we present a systematic revision of Chinese *Velarifictorus* based on detailed morphological examination. The objectives of this study are: (1) to examine and compare specimens from multiple locations across China; (2) to provide redescriptions for nine species to clarify their diagnostic characteristics; (3) to report two species as new country records for China; and (4) to propose two new synonymies. This revised taxonomic framework aims to facilitate future research on Orthoptera Latreille, 1810 diversity and phylogeny in China.

Material and methods

Sampling

Specimens were collected nocturnally by hand or with sweep nets and preserved in 60% ethanol. In the laboratory, they were air-dried for long-term storage. For examination of the male genitalia, they were dissected, cleared in a 10% NaOH solution, and subsequently stored in a glycerol-ethanol mixture following the protocol of Randell (1964).

Morphology and terminology

All required morphological features for diagnostic purposes were photographed using a LEICA M125 camera and subsequently edited with Adobe Photoshop CS6. The terminology used to describe male genitalia morphology follows Ingrisch (1998). All the specimens examined in this study are deposited in the Biological History Museum of the East China Normal University (ECNU).

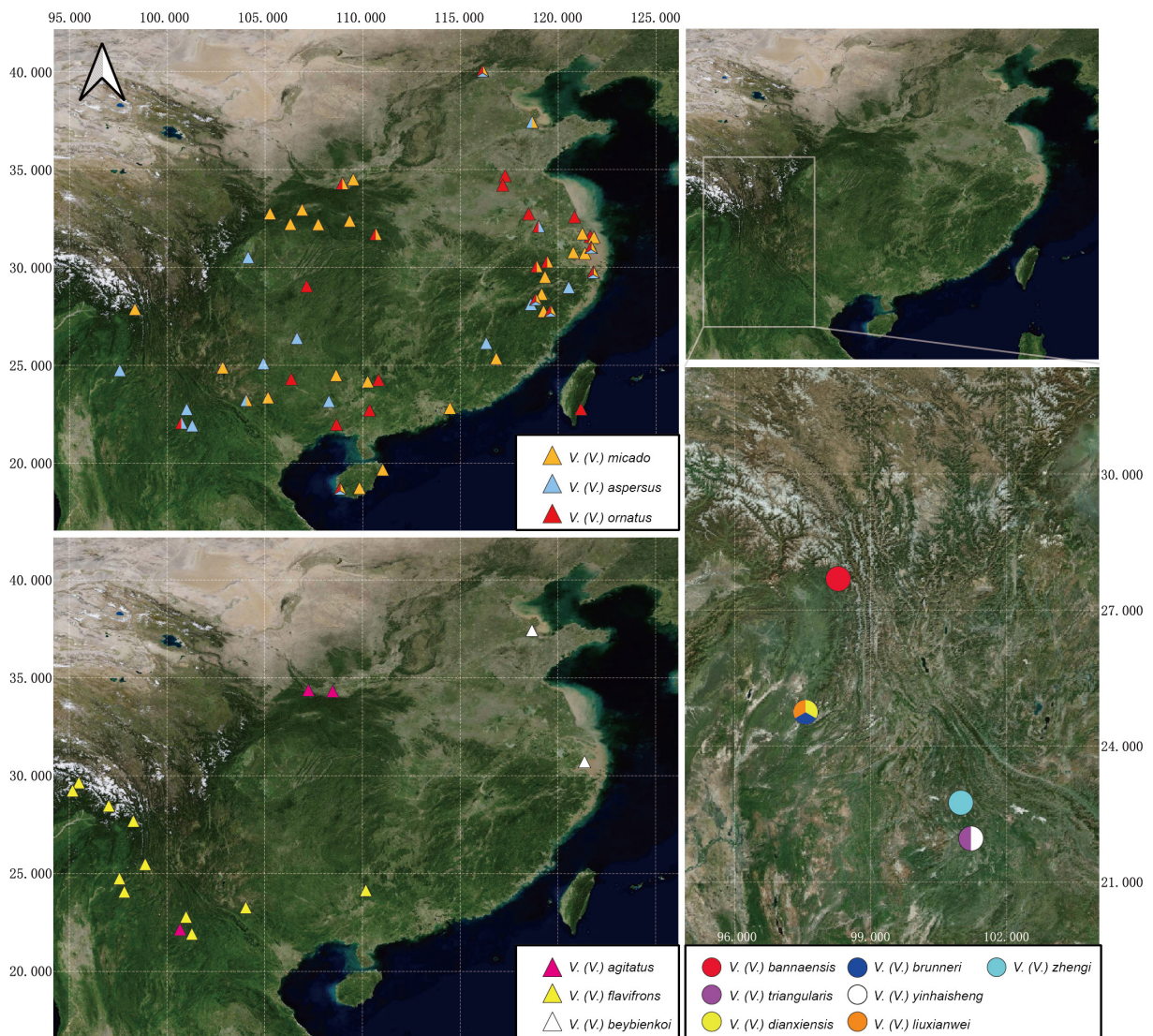


Fig. 1. Geographic location information of some examined specimens of 13 species of *Velarifictorus* Randell, 1964 in this study.

Abbreviations and measurements

- BL = Body length: length from head to apex of epiproct
FWL = Forewing length: length from base to apex of forewing
FWW = Forewing width: length between two sides of forewing
HFL = Hind femur length: length from the anterior margin to the posterior margin of hind femur
HL = Head length: length from the anterior part of head to occiput
HW = Head width: length between two sides of head
HWL = Hindwing length: length from base to apex of hindwing
OVL = Ovipositor length: length from base to apex of ovipositor
PL = Pronotum length: length from the anterior margin to the posterior margin of center pronotum
PW = Pronotum width: length between two sides of pronotum
S1 = Stripe 1: transverse stripe between lateral ocelli (Fig. 2)
S2 = Stripe 2: transverse stripe starting from eyes, extending to the top of vertex (Fig. 2).
S3 = Stripe 3: longitudinal stripe beginning near the middle of the top of head and reaching towards occiput (Fig. 2)
S4 = Stripe 4: the second longitudinal stripe on the outer side of vertex (Fig. 2)
S5 = Stripe 5: the outermost longitudinal stripe on the top of vertex (Fig. 2)
S6 = Stripe 6: stripes starting below eyes and extending to the base of mandible (Fig. 2)

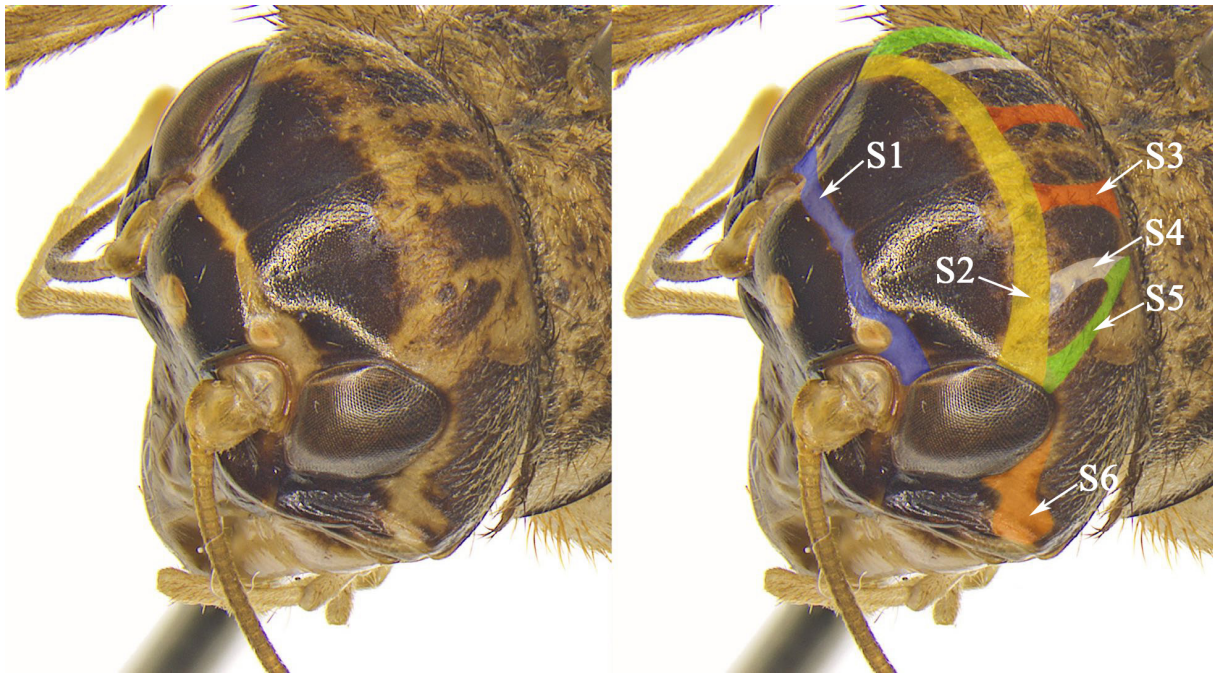


Fig. 2. Diagram of stripes on the head of male *Velarifictorus aspersus* (Walker, 1869). S1 (blue), S2 (yellow), S3 (red), S4 (white), S5 (green), S6 (orange).

Results

Taxonomy

Class Insecta Linnaeus, 1758
 Order Orthoptera Latreille, 1810
 Family Gryllidae Laicharting, 1781
 Subfamily Gryllinae Laicharting, 1781
 Tribe Gryllini Laicharting, 1781
 Genus *Velarifictorus* Randell, 1964

Subgenus *Velarifictorus* Randell, 1964

Type species

Scapsipedus micado Saussure, 1877 by original designation.

Diagnosis (based on Chinese species)

Body size ranges from medium to large within the tribe. Head is rounded, with a swollen vertex (Figs 3–4; [Supp. file 1](#): Fig. S1). There is either one transverse stripe or no stripe between the lateral ocelli, and there can be a vertical stripe or none below the middle ocellus (Figs 5–8; [Supp. file 1](#): Figs S2–S3). Occiput is decorated with six, two, or no longitudinal stripes (Figs 9–10; [Supp. file 1](#): Fig. S4–S5). Hind tibiae bear 5–6 pairs of dorsal spurs, 6 apical spurs. Bridge of the male epiphallus is transverse and relatively long, with a developed and variable medial process (Figs 11–12).

Differential diagnosis (based on Chinese species)

Velarifictorus is most similar to the sympatric genera *Svercacheta* Gorochoy, 1993 and *Modicogryllus* Chopard, 1961 in general habitus, but can be distinguished by the following characters. From *Svercacheta*, *Velarifictorus* differs by having the vertex of the head more swollen and prominent, whereas in *Svercacheta* it is relatively flat and not protruding. The medial process of the male epiphallus is well developed in *Velarifictorus*, while it is nearly absent in *Svercacheta*. Additionally, the apical field of the male tegmina is shorter in *Velarifictorus* compared to the longer condition in *Svercacheta*. From *Modicogryllus*, *Velarifictorus* can be recognized by its more swollen and prominent vertex, in contrast to the relatively flat and non-protruding vertex of *Modicogryllus*. Furthermore, the medial process of the male epiphallus is well developed in *Velarifictorus*, whereas it is nearly absent in *Modicogryllus*.

Key to male *Velarifictorus* species from China

Note: *V. arisanicus* and *V. curvinervis* are not included in this key due to lack of specimens.

1. S1 between lateral ocelli (Figs 5A–C, G–I, 7A–C) 2
 - No distinct stripe between lateral ocelli (Fig. 8A–C) 6
2. Clypeus more or less concave (Figs 3G–I, 4G–I) *V. (V.) aspersus* (Walker, 1869)
 - Clypeus not concaved (Fig. 3A–F, P–R) 3
3. S6 extended to occiput, nearly forming a U shape (Figs 3D–F, 4A–C) 4
 - S6 extended straight downward, not forming a U shape. (Fig. 3A–C, P–R) 5
4. Middle of S1 narrow, no distinct triangular pattern below middle ocellus (Fig. 7A–B), body rather small (BL♂14.0–15.1, ♀10.9–15.8) *V. (V.) beybienkoi* Gorochoy, 1985
 - Both sides and middle of S1 equally thick, with one triangular pattern below ocellus (Fig. 5D–F), body size medium (BL♂16.2–18.1 ♀15.8–19.0) *V. (V.) flavifrons* Chopard, 1966

5. S1 not extended below frontal suture, or extremely thick (Fig. 5A–C); pronotum without distinct white pattern on both sides ([Supp. file 1](#): Fig. S8D–F) *V. (V.) micado* (Saussure, 1877)
 - S1 extend below ecdysial suture (Fig. 6G–I); pronotum with white pattern on both sides ([Supp. file 1](#): Fig. S8A–C) *V. (V.) dianxiensis* He, 2018
6. S3, S4, S5 distinct (Figs 9J–O, 10J–K) 7
 - S3, S4, S5 not distinct (Fig. 10C–I, L) 10
7. Apical field not narrow ([Supp. file 1](#): Fig. S6J–K) *V. (V.) bannaensis* Zhang, Liu & Shi, 2017
 - Apical field narrow ([Supp. file 1](#): Fig. S7J–O) 8
8. Male ectoparamere elongated and slender (Fig. 13M–O; Ma 2019a: fig. 3i) 9
 - Male ectoparamere lobe-shaped, not elongated (Fig. 13J–L) *V. (V.) ornatus* (Shiraki, 1911)
9. Lateral margins of the medial process of male epiphallus straight, not bending ventrally; lateral lobes of male epiphallus narrow (Ma 2019a: fig. 3f); gena without S6 (Ma 2019a: fig. 4f)
 - *V. (V.) stultus* Ma, 2019
 - Lateral margins of medial process of male epiphallus bend ventrally; lateral lobes of male epiphallus wide (Ma 2019a: fig. 3d–e; Fig. 14M–O); gena with S6 *V. (V.) agitatus* Ma, 2019
10. Medial process of male epiphallus triangular (Fig. 12J–L) 11
 - Medial process of male epiphallus not triangular 12
11. Medial process of male epiphallus broader, apex obtuse *V. (V.) zhengi* Zheng & Ma, 2022
 - Medial process of male epiphallus narrower, apex acute (Fig. 12L)
 - *V. (V.) triangularis* Ingrisch, 1998
12. Medial process of male epiphallus nearly rectangular, with a concave at the center of the apical edge (Fig. 12G–I; Wang *et al.* 2023: fig. 7a) 13
 - Medial process of male epiphallus not rectangular, without a concave at the center of the apical edge (Di *et al.* 2025: figs 3–4) 14
13. Two distal corners of the medial process of male epiphallus sharp, projecting outward (Fig. 12G–I), male ectoparamere narrow (Fig. 15G–I) *V. (V.) brunneri* (Chopard, 1969)
 - Two distal corners of the medial process of male epiphallus right-angled, not projecting outward (Wang *et al.* 2023: fig. 7a), male ectoparamere wide (Wang *et al.* 2023: fig. 7c)
 - *V. (V.) yuanilandrevus* Wang & Ma, 2023
14. Medial process of male epiphallus thickened and narrow (Ma *et al.* 2019: fig. 4a–b)
 - *V. (V.) landrevus* Ma, Qiao & Zhang, 2019
 - Medial process of male epiphallus sheet-like (Fig. 12F, O) 15
15. Apex of medial process of male epiphallus with two angles (Fig. 12F)
 - *V. (V.) yinhaisheng* Di & He, 2025
 - Apex of medial process of male epiphallus with four angles (Fig. 12O)
 - *V. (V.) liuxianwei* Di & He, 2025

***Velarifictorus (Velarifictorus) agitatus* Ma, 2019**

Figs 3M–O, 6D–F, 9M–O, 11M–O, 13M–O, 14M–O

[Supp. file 1](#): Figs S1M–N, S3D–E, S5A–B, S7M–O, S9M–N, S10M–N

Chinese name: 灵斗蟋

Velarifictorus (Velarifictorus) agitatus shaanxiensis Ma, 2019a: 283.

Velarifictorus (Velarifictorus) agitatus yunnanensis Ma, 2019a: 283.

Velarifictorus (Velarifictorus) agitatus agitatus Ma, 2019b: 591. [nom. nov. of *Velarifictorus (Velarifictorus) agitatus shaanxiensis*]

Velarifictorus (Velarifictorus) agitatus minutus Ma, 2019b: 591. [nom. nov. of *Velarifictorus (Velarifictorus) agitatus yunnanensis*] **syn. nov.**

Velarifictorus (Velarifictorus) agitatus shaanxiensis – Ma 2019b: 591. [invalid]

Velarifictorus (Velarifictorus) agitatus yunnanensis – Ma 2019b: 591. [primary homonym of *Velarifictorus yunnanensis* Liu & Yin 1993]

Velarifictorus (Velarifictorus) agitatus agitatus – Zhao & Liu 2022: 247.

Velarifictorus (Velarifictorus) agitatus minutus – Zhao & Liu 2022: 247.

Diagnosis

Body size is small within the genus. S1 and S2 are absent (Fig. 6D–F), S3, S4, S5 are present (Fig. 9M–O), S6 extends straight downward (Fig. 3M–O). Male. Middle ocellus has one vertical or triangular stripe below it (Fig. 6D–F); forewing length is two-thirds of abdomen length; medial process of male epiphallus is divided into two lobes with a U-shaped concavity in the middle (Fig. 11M–O). Female. Ovipositor is slightly shorter than cercus ([Supp. file 1](#): Fig. S9M–N). The genitalia of *V. fallax* are very similar to those of this species in the shape of the medial process of male epiphallus, but ectoparameres of this species with two branches.

Material examined

CHINA – **Shaanxi** • 2 ♂♂, 1 ♀; Baoji; 34°22'18.124" N, 107°14'24.040" E; 15 Aug. 2018; Chu-Ze Shen leg.; ECNU 1482-DM048, ECNU 1387-DM049, ECNU 1536-DM114 • 2 ♂♂; Xingping; 34°18'54.432" N; 108°28'37.264" E; 25 Aug. 2020; Liang-Dong Song leg.; attracted by light; ECNU DM513, ECNU DM514 • 1 ♂; same data as for preceding; 26 Aug. 2015; ECNU DM515 • 1 ♀; same data as for preceding; 1 Sep. 2020; ECNU DM516 • 1 ♀; same data as for preceding; 7 Aug. 2020; ECNU DM517 • 1 ♀; same data as for preceding; 6 Aug. 2020; ECNU DM518 • 1 ♀; same data as for preceding; 3 Sep. 2020; ECNU DM519 • 1 ♂; same data as for preceding; 15 Sep. 2017; ECNU DM520 • 1 ♂; same data as for preceding; 4 Sep. 2020; ECNU DM521. – **Yunnan** • 1 ♂, 1 ♀; Xishuangbanna, Nabanhe; 22°8'51.331" N; 100°40'4.800" E; 30 Apr. 2017; Zhu-Qing He leg.; ECNU DM112, ECNU 490-DM113.

Redescription

Male

Brachypterous. Body rather small. Head round, almost equal to pronotum in length; S1 absent (Fig. 6D–F), S2 inconspicuous; posterior area of head densely covered with short hairs; S3, S4, S5 present (Fig. 9M–O), S6 straight downward (Fig. 3M–O). Eyes oval, contiguous with antennal sockets; ocelli arranged in inverted triangle, below middle ocellus with one vertical stripe. Antennal sockets located in middle of frons, approximately triangular. Clypeus with several transverse wrinkles, median part of epistomal sulcus with no concave. Mandible length 0.42–0.45 times the height of the head (Fig. 6D–F). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin straight, anterior and posterior margins with

setae; dorsally covered with short setae, both sides with dot-like patterns; median with one groove near anterior part. Tegmina: oblique veins two; mirror nearly rectangular with one arched vein inside; apical field narrow, wing chambers normal (Supp. file 1: Fig. S7M–O). Hind tibiae: 5 spurs on outer side, 5 spurs on inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed, sheet-like; central part with distinct U-shaped depression, lateral sides of medial process fold ventrad (Figs 11M–O, 14M–O). Lateral lobe of epiphallus sheet-like, slightly curved dorsad, gradually narrowing from base to apex, apex rounded with setae (Fig. 14M–O). Ectoparamere relatively long, outer side of middle with wide transverse width, half of apex slender, finger-shaped, bending dorsad; inner margin at one-third of distance from the apex with one process dorsally (Fig. 13M–O).

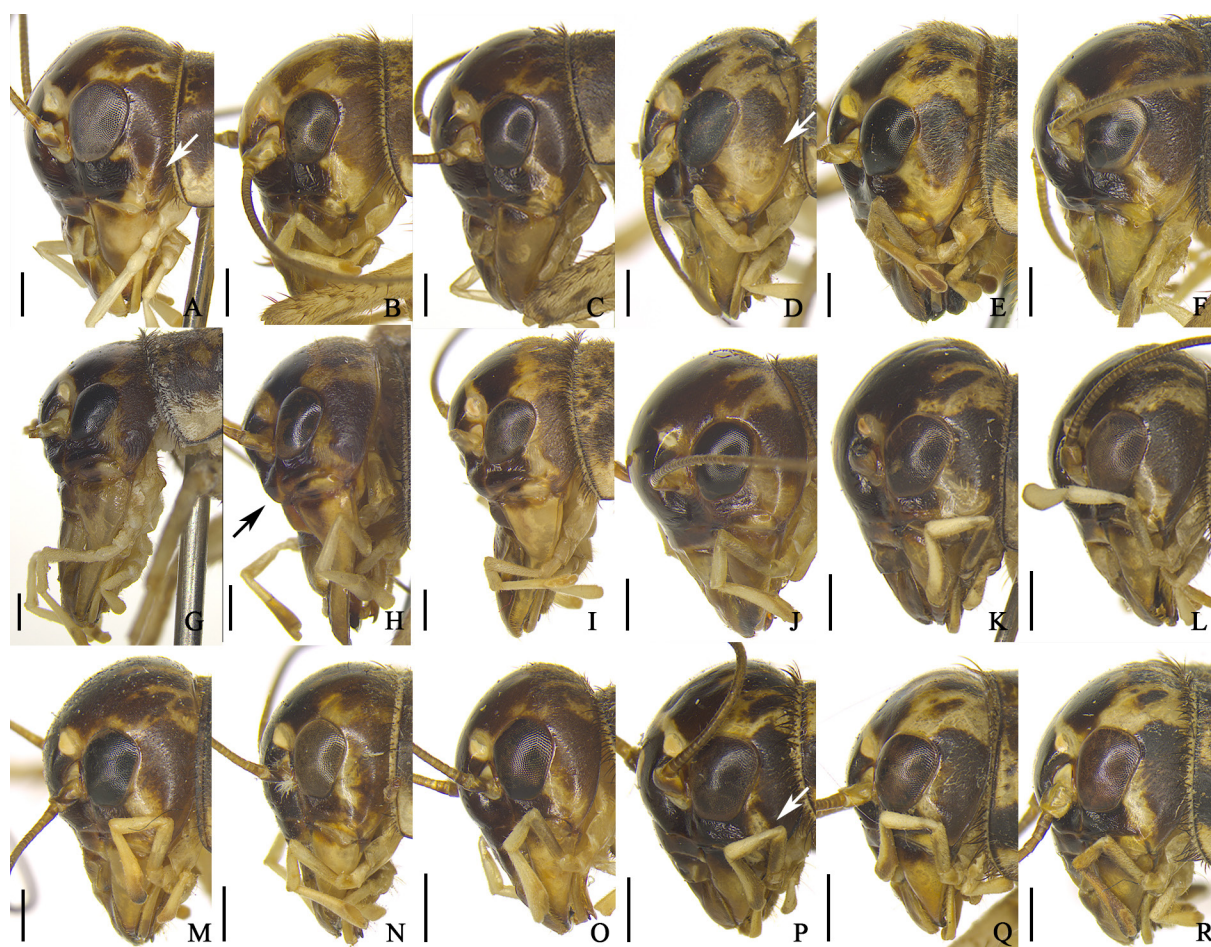


Fig. 3. Heads of male *Velarifictorus* Randell, 1964 in lateral views. **A–C.** *V. (V.) micado* (Saussure, 1877). **D–F.** *V. (V.) flavifrons* Chopard, 1966. **G–I.** *V. (V.) aspersus* (Walker, 1869). **J–L.** *V. (V.) ornatus* (Shiraki, 1911). **M–O.** *V. (V.) agitatus* Ma, 2019. **P–R.** *V. (V.) dianxiensis* He, 2018. **A.** ECNU 1011-DM055. **B.** ECNU 749-DM062. **C.** ECNU 4501-DM061. **D.** ECNU DM071. **E.** ECNU 405-DM052. **F.** ECNU 378-DM169. **G.** ECNU 4508-DM079. **H.** ECNU 733-DM103. **I.** ECNU 2238-DM038. **J.** ECNU 4784-DM067. **K.** ECNU 3943-DM051. **L.** ECNU 4785-DM068. **M.** ECNU 1482-DM048. **N.** ECNU 1387-DM049. **O.** ECNU DM112. **P.** ECNU 1045-DM043. **Q.** ECNU DM044. **R.** ECNU DM111. White arrows indicate: A = S6 straight downward; D = S2 nearly U-shaped; P = S6 straight downward. The black arrow indicates the depression on the clypeus. Scale bars = 1 mm.

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1M–N, S5A–B). A stripe extends above epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal stripe (Supp. file 1: Fig. S3D–E). Forewings partially overlapping, slightly shorter than apex of abdomen (Supp. file 1: Fig. S10M–N). Ovipositor slightly shorter than cercus (Supp. file 1: Fig. S9M–N).

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets pale yellow; frons brown to black; vertex stripes yellow; pronotum with yellow spots; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual variation

Some male individuals have triangular patterns below median ocellus. Both males and females have macropterous and brachypterous forms. Male macropterous: similar to male brachypterous in appearance, hindwings well developed, folded in tail-like manner, longer than apex of abdomen. Female macropterous: similar to male macropterous in appearance, hindwings well developed, folded in tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S10M).

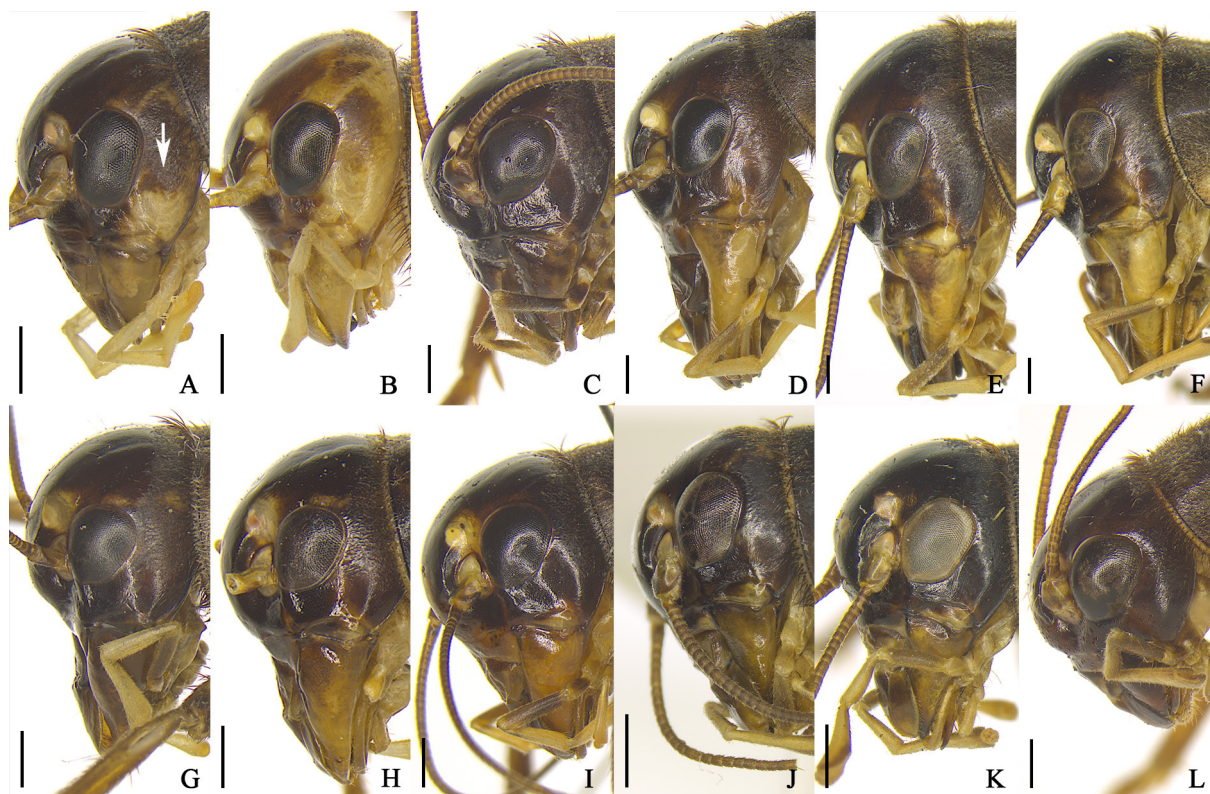


Fig. 4. Heads of male *Velarifictorus* Randell, 1964 in lateral views. **A–B.** *V. (V.) beybienkoi* Gorochoy, 1985. **C.** *V. (V.) yinhaisheng* Di & He, 2025. **D–F.** *V. (V.) brunneri* (Chopard, 1969). **G–H.** *V. (V.) zhengi* Zheng & Ma, 2022. **I.** *V. (V.) triangularis* Ingrisch, 1998. **J–K.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **L.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU 2092-DM117. **B.** ECNU DM504. **C.** ECNU 4514-DM009. **D.** ECNU DM002. **E.** ECNU 2123-DM013. **F.** ECNU DM014. **G.** ECNU 4250-DM004. **H.** ECNU 2022-DM035. **I.** ECNU 4515-DM005. **J.** ECNU DM506. **K.** ECNU DM507. **L.** ECNU 1212-DM509. White arrow indicates: A = nearly U-shaped. Scale bars = 1 mm.

Measurements (mm)

BL♂10.9–16.0 ♀11.5–13.0; HL♂1.4–2.4 ♀1.6–2.1; HW♂3.0–4.4 ♀3.2–3.5; PL♂2.1–2.7 ♀2.3–2.5; PW♂2.9–4.4 ♀3.3–4.0; FWL♂5.9–7.4 ♀6.1–7.1; FWW♂2.9–3.8 ♀2.1–3.2; HWL♂12.1–17.0 ♀13.9–15.7 (macropterous); HFL♂6.8–9.5 ♀8.1–8.2; OVL♀6.1–7.5.

Distribution

China (Shaanxi, Yunnan).

Velarifictorus (Velarifictorus) aspersus (Walker, 1869)

Figs 3G–I, 5G–I, 9G–I, 11G–I, 13G–I, 14G–I

[Supp. file 1](#): Figs S1G–I, S2G–I, S4G–I, S7G–I, S9G–I, S10G–I, S11C

Chinese name: 长颚斗蟋

Gryllus aspersus Walker, 1869: 39.

Gryllodes berthellus Saussure, 1877: 373 [205].

Scapsipedus mandibularis Saussure, 1877: 414 [246].

Velarifictorus (Velarifictorus) aspersus borealis Gorochoy, 1985: 91.

Gryllodes berthellus – Casto de Elera 1895: 216. — Chopard 1929: 102. [synonymized by Chopard 1929: 102]

Scapsipedus aspersus – Sandrasagara 1954: 547.

Velarifictorus aspersus – Randell 1964: 1596. — Chopard 1967: 122. — Vasanth 1993: 37. — Yin & Liu 1995: 61. — Ingrisch 1998: 318. — Tan *et al.* 2012: 66.

Scapsipedus mandibularis – Chopard 1967: 123. [synonymized by Chopard 1967: 123]

Velarifictorus (Velarifictorus) aspersus aspersus – Gorochoy 1985: 91. — Ingrisch 2002: 141. — Kim & Pham 2014: 61. — Tan & Kamaruddin 2016: 31. — Tan *et al.* 2017: 379.

Velarifictorus (Velarifictorus) aspersus – Gorochoy 2001: 319. — Shishodia *et al.* 2010: 211. — He 2018: 529. — Zhao & Liu, 2022: 247.

Velarifictorus (Velarifictorus) aspersus borealis – Storozhenko *et al.* 2015: 529 — He 2018: 529. [synonymized by He 2018: 529]

Diagnosis

Body size is medium within the genus. S1 is rather thick. S2, S3, S4, S5 are present (Figs 5G–I, 9G–I). S6 is present and extends straight downward (Fig. 3G–I). Male. A vertical stripe is present below middle ocellus (Fig. 5G–I); mandible is elongated, and clypeus has a noticeable depression (Fig. 3G–I); forewings are slightly shorter than the end of abdomen ([Supp. file 1](#): Fig. S7G–I); medial process of male epiphallus is narrow and elongated (Fig. 11G–I). Female. Ovipositor is short and stout, not exceeding the length of cercus or equal to it ([Supp. file 1](#): Fig. S9G–I); forewing length two-thirds of length of abdomen, partially overlapping, and with a semi-circular yellow spot at base ([Supp. file 1](#): Fig. S10G–I).

Material examined

CHINA – **Beijing** • 1 ♂; Beijing Botanical Garden; 40°0'18.479" N; 116°12'41.782" E; 30 Jul. 2017; Zhu-Qing He leg.; ECNU 733-DM103. – **Fujian** • 1 ♂; Wuyishan; 27°39'28.019" N; 117°57'32.879" E; 7 Sep. 2018; Zhu-Qing He leg.; ECNU 1498-DM077. – **Guangxi** • 1 ♂, 1 ♀; Nanning, Wuming, Chunxiayuan; 23°9'51.353" N; 108°15'50.886" E; 19 Jul. 2020; Yi Hu leg.; ECNU 3378-DM087, ECNU 3377-DM094 • 3 ♂♂; Chongzuo, Longzhou; 22°17'57.116" N, 106°42'3.179" E; 6 Aug. 2000; Kai Li leg.; ECNU DM096, ECNU DM098, ECNU DM106. – **Guizhou** • 3 ♂♂, 5 ♀♀; Xingyi; 25°5'49.438" N; 104°54'45.094" E; 22 Jul. 2019; Zhu-Qing He leg.; ECNU 2238-DM038, ECNU 2240-DM097, ECNU 2242-DM102, ECNU 2245-DM040, ECNU 2237-DM066, ECNU 2236-DM095, ECNU 2241-DM099,

ECNU 2239-DM101 • 1 ♂, 1 ♀; Normal University, Huaxi Campus; 26°23'9.211" N; 106°37'57.077" E; 8 Oct. 2019; Xu-Lin Zhou leg.; ECNU 2460-DM109, ECNU 2641-DM110. – **Hainan** • 3 ♂♂; Jianfengling; 18°45'10.138" N; 108°53'19.709" E; 22 Jul. 2009; Zhu-Qing He leg.; ECNU DM084, ECNU DM104, ECNU DM105 • 1 ♂; Jianfeng; 18°41'46.309" N; 108°47'56.166" E; 18 Jul. 2009; Zhu-Qing He leg.; ECNU DM090 • 1 ♂, 1 ♀; Jianfengling; 18°45'10.138" N; 108°53'19.709" E; 18 Jul. 2009; Zhu-Qing He leg.; ECNU DM100, ECNU DM107. – **Jiangsu** • 1 ♂; Nanjing, Nanjing Normal University Xianlin Campus; 32°6'4.680" N; 118°54'39.622" E; 17 Aug. 2023; Zhu-Qing He leg.; ECNU 5243. – **Jiangxi** • 1 ♂, 2 ♀♀; Ganzhou, Shicheng, Ganjiangyuan; 26°8'6.050" N; 116°18'56.412" E; 7 Sep. 2021; Jing-Song Zong leg.; ECNU DM039, ECNU DM078, ECNU DM082. – **Shandong** • 1 ♂; Dongying; 37°25'54.584" N; 118°40'27.257" E; 15 Aug. 2021; Zi-Ren Zhang leg.; ECNU 4508-DM079. – **Sichuan** • 1 ♂; Chengdu; 30°31'6.078" N; 104°7'51.355" E; 21 Sep. 2017; Zhu-Qing He leg.; ECNU 938-DM085. – **Yunnan** • 1 ♂; Wenshan, Xiaojie; 23°15'52.924" N; 104°2'1.241" E; 31 Jul. 2021; Jing-Song Zong leg.; ECNU 4101-DM080 • 1 ♂; Pu'er; 22°45'12.262" N; 100°59'17.588" E; 13 Jul. 2021; Zhu-Qing He leg.; ECNU 4249-DM081 • 1 ♂; Yingjiang, Nabang; 24°44.79' N; 97°34.05' E; 1 Jul. 2017; Zhu-Qing He leg.; ECNU 691-DM036 • 2 ♂♂, 1 ♀; Xishuangbanna, Menglun Botanical Garden; 21°55'6.784" N; 101°16'24.665" E; 25 Apr. 2017; Zhu-Qing He leg.; ECNU 408-DM083, ECNU 407-DM091, ECNU DM092 • 1 ♂; same data as for preceding; 19 Sep. 2017; Zhu-Qing He leg.; ECNU 951-DM086 • 2 ♀♀; Xishuangbanna, Nabanhe; 22°8'51.331" N; 100°40'4.800" E; 30 Apr. 2017; Zhu-Qing He leg.; ECNU DM088, ECNU 553-DM108 • 1 ♂; same data as for preceding; 4 May 2009; Jia-Yao Hu and Zi-Wei Yin leg.; ECNU DM093. – **Zhejiang** • 1 ♂; Lishui, Suichang, Jiulongshan; 28°24'24.718" N; 118°51'14.551" E; 30 Jul. 2016; Zhu-Qing He leg.; ECNU 261-DM037 • 1 ♂; Jinhua, Dapanshan National Nature Reserve; 28°59'5.006" N; 120°32'8.095" E; 4 Oct. 2019; Zhu-Qing He leg.; ECNU 2435-DM050 • 1 ♂; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 23 Sep. 2018; Bai-Qiu Wang leg.; ECNU DM076 • 1 ♀; Wenzhou, Wuyanling; 27°42'31.522" N; 119°39'43.412" E; 3 Oct. 2019; Zhu-Qing He leg.; ECNU 2393-DM089.

Redescription

Male

Brachypterous. Body medium-sized. Head broad and flattened, slightly shorter than pronotum length; S1 rather thick (Fig. 5G–I); S2 present (Fig. 9G–I); posterior area of head densely covered with short hairs, S3, S4, S5 present (Fig. 9G–I); S6 straight downward (Fig. 3G–I). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle. Antennal sockets located in the middle of frons, approximately triangular. Clypeus with several transverse wrinkles, median part of epistomal sulcus concave. Mandible length 0.46–0.51 times the height of the head. (Fig. 5G–I). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae; dorsally covered with short setae, both sides with dot-like patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with one arched vein inside; apical field normal (Supp. file 1: Fig. S7G–I). Hind tibiae: with 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse, medial process of epiphallus transverse and wide, middle with curved depression; both sides of edges straight, lateral apex nearly right angle (Fig. 11G–I). Lateral lobe of epiphallus sheet-like, anterior side relatively straight, posterior side curved dorsad in an arch, gradually narrowing from the base to the apex, apex rounded with setae (Fig. 14G–I). Ectoparamere lobe-shaped, curved dorsad, wide at the base, abruptly narrow at the one-third of length from the base, apex relatively sharp, bent; inner margin at one-third of distance from the apex bent dorsad (Fig. 13G–I).

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1G–I, S4G–I). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal stripe (Supp. file 1: Fig. S2G–I). Forewing length two-thirds of length of abdomen, partially overlapping,

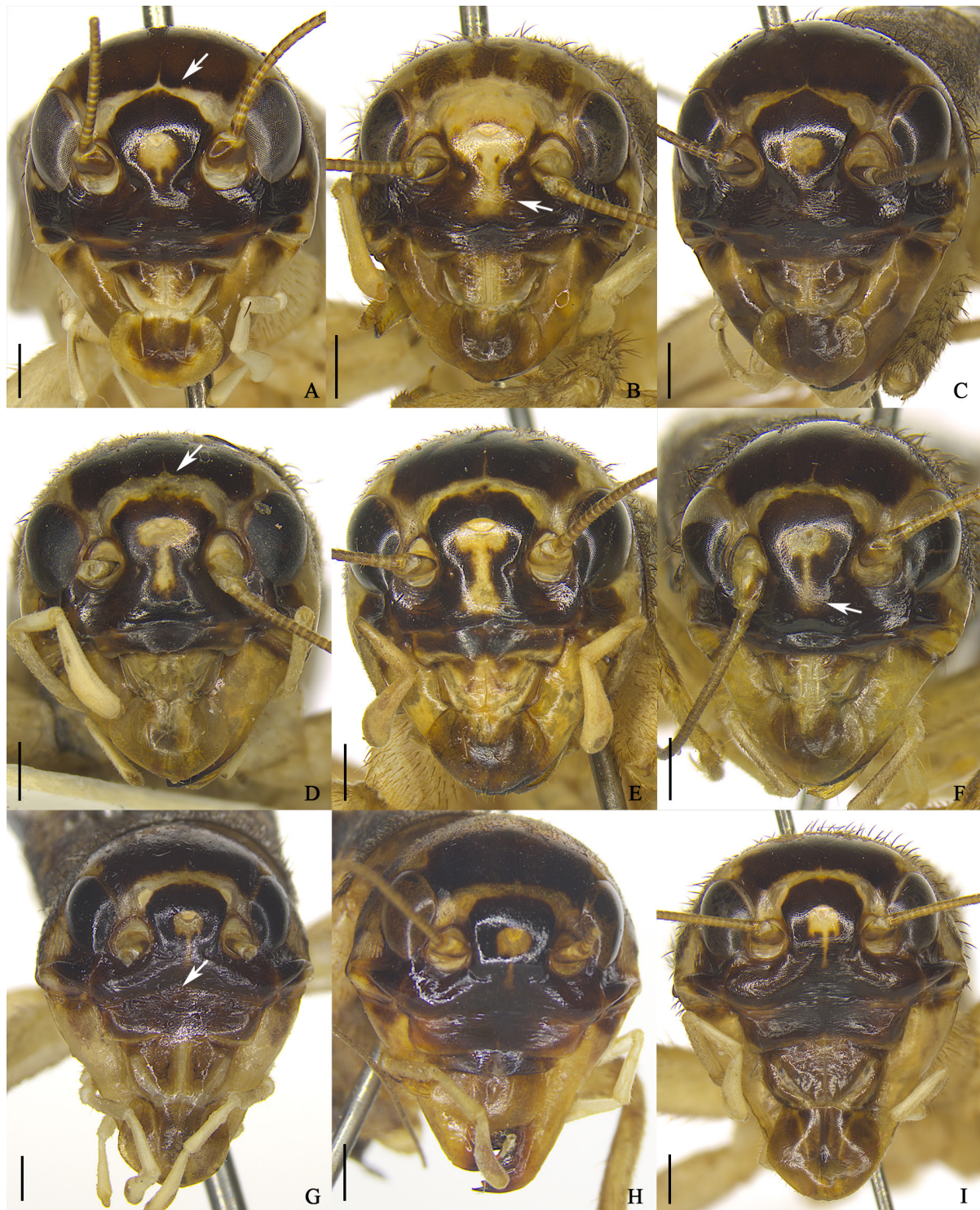


Fig. 5. Heads of male *Velarifictorus* Randell, 1964 in frontal views. **A–C.** *V. (V.) micado* (Saussure, 1877). **D–F.** *V. (V.) flavifrons* Chopard, 1966. **G–I.** *V. (V.) aspersus* (Walker, 1869). **A.** ECNU 1011-DM055. **B.** ECNU 749-DM062. **C.** ECNU 4501-DM061. **D.** ECNU DM071. **E.** ECNU 405-DM052. **F.** ECNU 378-DM169. **G.** ECNU 4508-DM079. **H.** ECNU 733-DM103. **I.** ECNU 2238-DM038. White arrows indicate: **A** = S1 gradually narrowing in the middle; **B** = nearly triangular pattern below the median ocellus; **D** = S1 thicker in the middle; **F** = the boundary of the yellow triangular mark below the ocellus is indistinct in some individuals; **G** = depression at the clypeus. Scale bars = 1 mm.

and with a semi-circular yellow spot at the base (Supp. file 1: Fig. S10G–I). Ovipositor short and stout, not exceeding the length of cercus or equal to it (Supp. file 1: Fig. S9G–I).

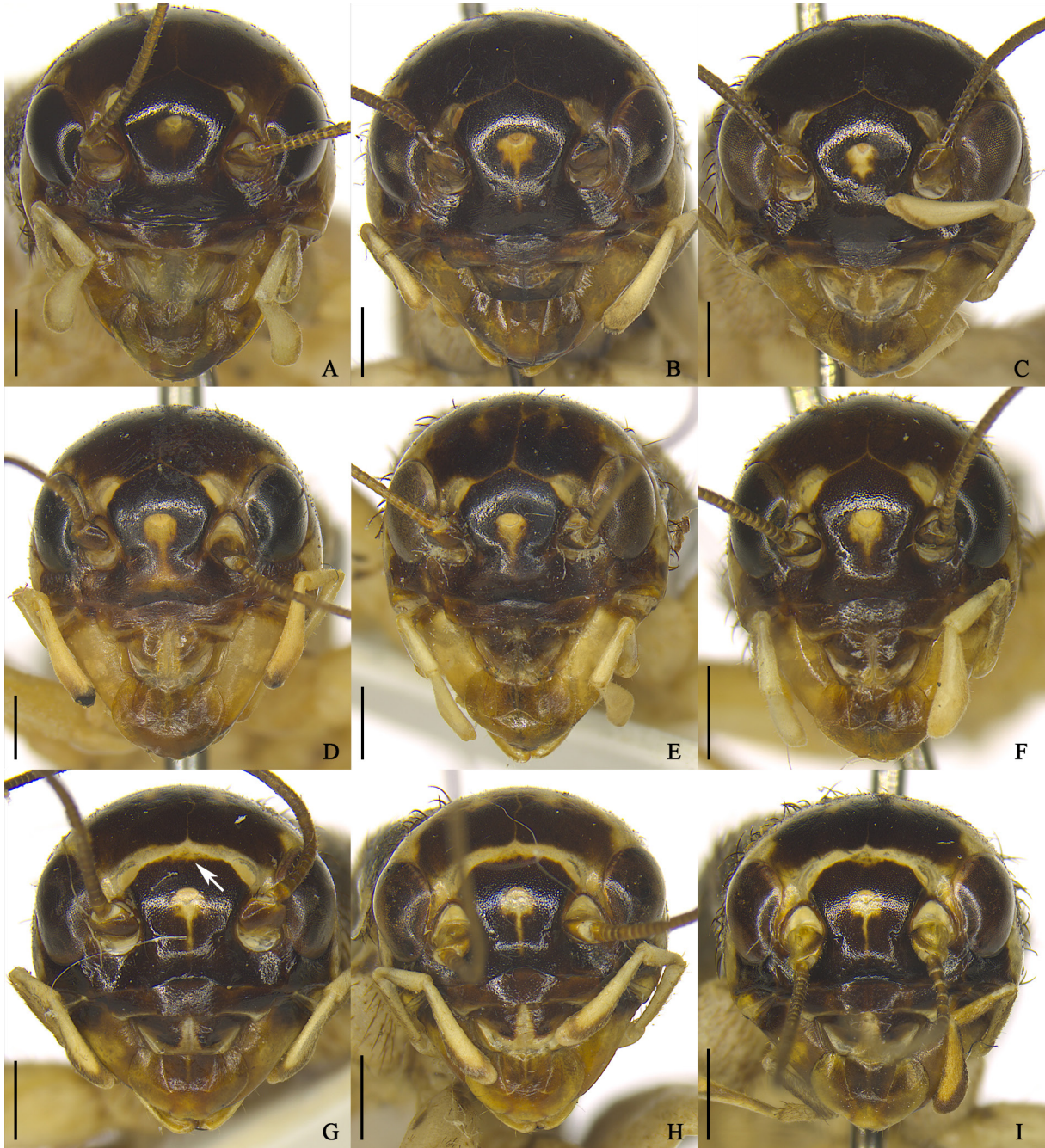


Fig. 6. Heads of male *Velarifictorus* Randell, 1964 in frontal views. A–C. *V. (V.) ornatus* (Shiraki, 1911). D–F. *V. (V.) agitatus* Ma, 2019. G–I. *V. (V.) dianxiensis* He, 2018. A. ECNU 4784-DM067. B. ECNU 3943-DM051. C. ECNU 4785-DM068. D. ECNU 1482-DM048. E. ECNU 1387-DM049. F. ECNU DM112. G. ECNU 1045-DM043. H. ECNU DM044. I. ECNU DM111. White arrow indicates the S1. Scale bars = 1 mm.

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets pale yellow; frons brown to black; stripe between ocelli yellow; vertex stripes yellow; pronotum with yellow spots; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual variation

There are variations in the visibility of S2 among different individuals. In some individuals, S2 is distinct, while in others, it is inconspicuous. Individuals commonly observed as brachypterous, with reduced hindwings, while some individuals are macropterous. Male macropterous: similar to male brachypterous in appearance, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen ([Supp. file 1](#): Fig. S11C). Female macropterous: similar to female brachypterous in appearance, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen.

Measurements (mm)

BL♂15.3–16.4 ♀16.6–19.0; HL♂2.5–2.6 ♀2.2–2.3; HW♂5.3–5.6 ♀5.0–5.2; PL♂2.7–3.0 ♀3.0–3.4; PW♂4.8–5.5 ♀5.3–5.7; FWL♂8.4–9.3 ♀7.5–10.6; FWW♂3.6–4.7 ♀3.3–3.4; HWL♂18.7–19.8 ♀19.3 (macropterous); HFL♂10.6–11.8 ♀11.7–12.6; OVL♀9.9–10.2.

Distribution

China (Anhui, Beijing, Fujian, Guangdong, Guangxi, Guizhou, Hainan, Hongkong, Hunan, Jiangsu, Jiangxi, Shandong, Shaanxi, Shanghai, Sichuan, Taiwan, Yunnan, Zhejiang); Bhutan; Brunei; India; Indonesia; Japan; Malay Peninsula; Myanmar; Nepal; Philippines; North Korea; Singapore; South Korea; Sri Lanka; Thailand; Vietnam.

Velarifictorus (Velarifictorus) bannaensis Zhang, Liu & Shi, 2017

Figs 4J–K, 7E–F, 10J–K, 12M–N, 15M–N, 16M–N

[Supp. file 1](#): Figs S1O, S3F, S5C, S6J–K, S9O, S10O

Chinese name: 版纳斗蟋

Velarifictorus (Velarifictorus) bannaensis Zhang, Liu & Shi, 2017: 26.

Velarifictorus (Velarifictorus) bannaensis – Chen *et al.* 2018: 502. — Zhao & Liu 2022: 247.

Diagnosis

Body size is medium within the genus. S1 and S2 are absent (Fig. 7E–F), S3, S4 and S5 are present (Fig. 10J–K), S6 is absent (Fig. 4J–K). Male. One short vertical line is present below middle ocellus (Fig. 7E–F); tegmina are slightly shorter than the end of abdomen, with the apical field being rather prolonged ([Supp. file 1](#): Fig. S6J); medial process of epiphallus has two half-lobes with the lateral margin concave inward (Fig. 12M–N). Female. Ovipositor exceeds the length of the cercus ([Supp. file 1](#): Fig. S9O).

Material examined

CHINA • 2 ♂♂, 1 ♀; Yunnan, Gongshan, Dulongjiang, Maku; 27°41'18.031" N; 98°16'51.784" E; 21 Jun. 2015; Wen-Xuan Bi leg.; ECNU 506 to ECNU 508.

Redescription

Male

Brachypterous. Body medium-sized. Head round, almost equal to pronotum in length; S1 absent (Fig. 7E–F); S2 absent (Fig. 4J–K); posterior area of the head densely covered with short hairs, S3 to S5 present (Fig. 10J–K); S6 absent. Eyes oval, contiguous with antennal sockets; ocelli arranged in

an inverted triangle, below middle ocellus with one short vertical stripe. Antennal sockets located in the middle of frons, approximately triangular. Clypeus rather smooth, median part of epistomal sulcus slightly concave. Mandible shorter than other parts of head (Fig. 7E–F). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae, dorsally covered with short setae, both sides with dot-like patterns, median with 1 groove near anterior part. Tegmina with two oblique veins; mirror nearly rectangular with 1 arched vein inside; apical field rather prolonged (Supp. file 1: Fig. S6J). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed with two half lobes, apex with one depression; lateral margin of medial process with one curved inward concavity (Fig. 12M–N). Lateral lobe of epiphallus sheet-like, anterior side relatively straight, posterior side curved dorsad in an arch, gradually narrowing from base to apex, apex rounded with setae (Fig. 16M–N). Ectoparamere lobe-shaped, curved dorsad, gradually narrowing from middle to apex, apex acute; inner margin at one-third of distance from the apex blunt (Fig. 15M–N).



Fig. 7. Heads of male *Velarifictorus* Randell, 1964 in frontal views. **A–B.** *V. (V.) beybienkoi* Gorochoy, 1985. **C.** *V. (V.) yinhaisheng* Di & He, 2025. **D.** *V. (V.) triangularis* Ingrisch, 1998. **E–F.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **A.** ECNU 2092-DM117. **B.** ECNU DM504. **C.** ECNU 4514-DM009. **D.** ECNU 4515-DM005. **E.** ECNU DM506. **F.** ECNU DM507. White arrows in A indicate: top = S1 thinner in the middle, slightly interrupted; bottom = below middle ocellus without distinct triangular pattern. Scale bars = 1 mm.

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1O, S5C). An indistinct stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one indistinct longitudinal stripe (Supp. file 1: Fig. S3F). Tegmina slightly shorter than apex of abdomen (Supp. file 1: Fig. S10O). Ovipositor longer than cercus (Supp. file 1: Fig. S9O).

Coloration

Body brown; eyes black, ocelli yellow; antennal sockets yellow; frons black; vertex stripes yellow; pronotum with yellow spots; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Measurements (mm)

BL♂15.3–16.5 ♀14.9; HL♂2.5–2.9 ♀2.6; HW♂4.5–5.5 ♀4.5; PL♂2.6–2.8 ♀2.8; PW♂4.5–4.8 ♀4.5; FWL♂8.0–8.3 ♀8.0; FWW♂4.5–4.7 ♀4.7; HFL♂9.6–10.2 ♀10.1; OVL♀11.1.

Distribution

China (Yunnan).



Fig. 8. Heads of male *Velarifictorus* Randell, 1964 in frontal views. **A–C.** *V. (V.) brunneri* (Chopard, 1969). **D–E.** *V. (V.) zhengi* Zheng & Ma, 2022. **F.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU DM002. **B.** ECNU 2123-DM013. **C.** ECNU DM014. **D.** ECNU 4250-DM004. **E.** ECNU 2022-DM035. **F.** ECNU 1212-DM509. Scale bars = 1 mm.

***Velarifictorus (Velarifictorus) beybienkoi* Gorochov, 1985**

Figs 4A–B, 7A–B, 9A–B, 10A–B, 12D–E, 15D–E, 16D–E

[Supp. file 1](#): Figs S1S–T, S5G–H, S6A–B, S10S–T, S11H, S12A–B, S13D–F.

Chinese name: 贝氏斗蟋

Velarifictorus beybienkoi Gorochov, 1985: 92.

Velarifictorus beybienkoi – Yin & Liu 1995: 61.

Velarifictorus (Velarifictorus) beybienkoi – Gorochov 2001: 319. — Chen *et al.* 2018: 502. — Kim 2021: 125. — Zhao & Liu 2022: 247.

Diagnosis

Body size is small within the genus. S1 is narrower in the middle (Fig. 7A–B), S2 is not prominent, S3 to S5 present (Fig. 10A–B), S6 extends to occiput, nearly forming a U shape (Fig. 4A–B). Male. Middle ocellus has one vertical line below it (Fig. 7A–B); forewing length is two-thirds of abdomen length ([Supp. file 1](#): Fig. S6A); medial process of male epiphallus is lamellate and trapezoidal, with or without a depression in the middle (Fig. 12D–E). Female. Ovipositor is slender and longer than cercus ([Supp. file 1](#): Fig. S13D–F); in brachypterous forms, forewings do not overlap each other and reach only half the length of abdomen ([Supp. file 1](#): Fig. S10S–T); in macropterous forms, forewings overlap and are slightly shorter than apex of abdomen ([Supp. file 1](#): Fig. S11H).

Material examined

CHINA – **Shandong** • 1 ♂, 2 ♀♀; Dongying; 37°25'54.584" N; 118°40'27.257" E; 10 Aug. 2019; Zi-Ren Zhang leg.; ECNU 2092-DM117 to ECNU 2091-DM119. – **Shanghai** • 2 ♂♂, 2 ♀♀; Jinshan; 30°43'19.416" N; 121°21'55.080" E; 30 Aug. 2016; Zhu-Qing He leg.; ECNU DM504, ECNU DM505, ECNU 288-DM120, ECNU DM121.

Redescription

Male

Brachypterous. Body rather small. Head round, top flattened, almost equal to pronotum in length; S1 narrow (Fig. 7A–B); S2 indistinct; posterior area of head densely covered with short hairs, S3, S4, S5 present (Fig. 10A–B); S6 nearly U-shaped (Fig. 4A–B). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, one vertical stripe below middle ocellus. Antennal sockets located in the middle of frons, approximately circular. Clypeus with several transverse wrinkles, median part of epistomal sulcus straight. Mandible shorter than other parts of head (Fig. 7A–B). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae; dorsally covered with short setae, both sides with dot-like patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with one arched vein inside; apical field normal ([Supp. file 1](#): Fig. S6A–B). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus sheet-like, rectangular; apex truncated with setae (Fig. 12D–E). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex sharp with setae (Fig. 16D–E). Ectoparamere lobe-shaped, outer side of middle to apex bending dorsad, apex sharp; inner margin at one-third of the distance from the apex rounded (Fig. 15D–E).

Female

Brachypterous. Similar to male brachypterous in appearance ([Supp. file 1](#): Figs S1S–T, S5G–H). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal



Fig. 9. Heads of male *Velarifictorus* Randell, 1964 in dorsal views. **A–C.** *V. (V.) micado* (Saussure, 1877). **D–F.** *V. (V.) flavifrons* Chopard, 1966. **G–I.** *V. (V.) aspersus* (Walker, 1869). **J–L.** *V. (V.) ornatus* (Shiraki, 1911). **M–O.** *V. (V.) agitatedus* Ma, 2019. **P–R.** *V. (V.) dianxiensis* He, 2018. **A.** ECNU 1011-DM055. **B.** ECNU 749-DM062. **C.** ECNU 4501-DM061. **D.** ECNU DM071. **E.** ECNU 405-DM052. **F.** ECNU 378-DM169. **G.** ECNU 4508-DM079. **H.** ECNU 733-DM103. **I.** ECNU 2238-DM038. **J.** ECNU 4784-DM067. **K.** ECNU 3943-DM051. **L.** ECNU 4785-DM068. **M.** ECNU 1482-DM048. **N.** ECNU 1387-DM049. **O.** ECNU DM112. **P.** ECNU 1045-DM043. **Q.** ECNU DM044. **R.** ECNU DM111. White arrows indicate S2. Scale bars = 1 mm.

stripe (Supp. file 1: Fig. S12A–B). Forewings not overlapping each other, reaching only half the length of abdomen (Supp. file 1: Fig. S10S–T). Ovipositor slender, longer than cercus (Supp. file 1: Fig. S13D–F).

Coloration

Body brown; eyes black, ocelli yellow; antennal sockets pale yellow; frons dark brown; stripe between ocelli yellow; vertex stripes yellow; pronotum with yellow spots; femora light brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual variation

Individuals commonly observed as brachypterous. No male macropterous individuals were observed, while some female individuals were macropterous. Female macropterous: similar to female brachypterous in appearance; forewings overlapping, slightly shorter than apex of abdomen, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S11H).

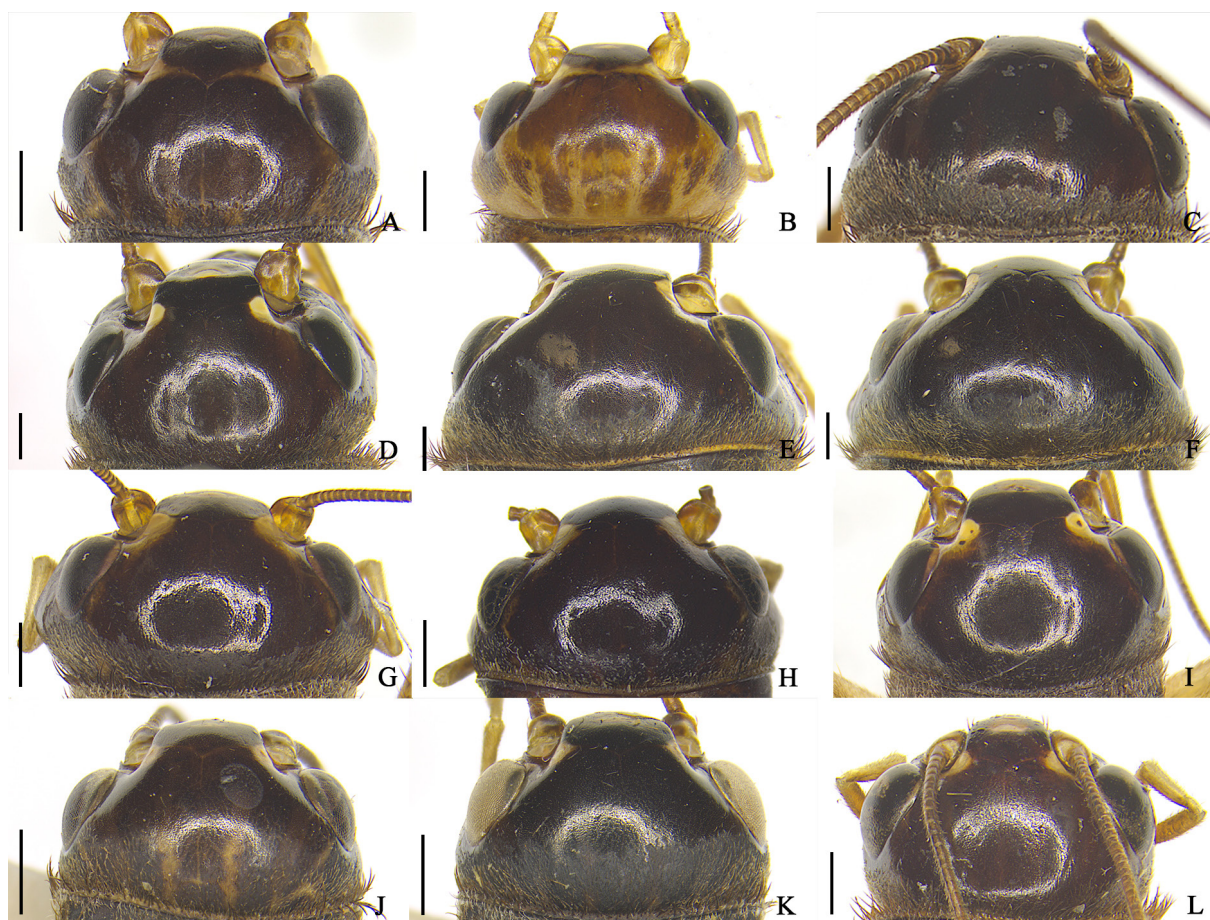


Fig. 10. Heads of male *Velarifictorus* Randell, 1964 in dorsal views. **A–B.** *V. (V.) beybienkoi* Gorochoy, 1985. **C.** *V. (V.) yinhaisheng* Di & He, 2025. **D–F.** *V. (V.) brunneri* (Chopard, 1969). **G–H.** *V. (V.) zhengi* Zheng & Ma, 2022. **I.** *V. (V.) triangularis* Ingrisch, 1998. **J–K.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **L.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU 2092-DM117. **B.** ECNU DM504. **C.** ECNU 4514-DM009. **D.** ECNU DM002. **E.** ECNU 2123-DM013. **F.** ECNU DM014. **G.** ECNU 4250-DM004. **H.** ECNU 2023-DM017. **I.** ECNU 4515-DM005. **J.** ECNU DM506. **K.** ECNU DM507. **L.** ECNU 1212-DM509. Scale bars = 1 mm.

Measurements (mm)

BL♂14.0–15.1 ♀10.9–15.8; HL♂2.1–2.2 ♀2.2–2.5; HW♂3.9–4.3 ♀3.5–4.5; PL♂2.2–2.7 ♀2.1–2.7; PW♂3.9–4.0 ♀3.5–4.4; FWL♂7.2–8.0 ♀3.4–4.7 (brachypterous) 6.9–7.5 (macropterous); FWW♂3.2–3.7 ♀2.1–2.4 (brachypterous) 3.2–3.4 (macropterous); HWL♀14.4–18.2 (macropterous); HFL♂7.4–10.0 ♀7.2–10.4; OVL♀9.5–12.8.

Distribution

China (Hainan, Shandong, Shanghai, Tianjin); South Korea.

Velarifictorus (Velarifictorus) brunneri (Chopard, 1969)

Figs 4D–F, 8A–C, 10D–F, 12G–I, 15G–I, 16G–I

[Supp. file 1](#): Figs S1V–X, S5J–L, S6D–F, S10V–X, S12D–F, S13G–I

Chinese name: 硕斗蟋

Scapsipedus brunneri Chopard, 1969: 119.

Grylloides mandibularis Brunner von Wattenwyl, 1893: 200.

Grylloides mandibularis – Chopard 1969: 123. [homonym of *Grylloides mandibularis* Saussure, 1877]

Velarifictorus brunneri – Otte 1994: 16.

Velarifictorus (Velarifictorus) brunneri – Gorochov 2001: 319.

Diagnosis

Body size is large within the genus. S1 and S2 are absent (Fig. 8A–C), S3, S4, S5 are absent or very short and faint (Fig. 10D–F), S6 extends straight downward (Fig. 4D–F). Male. Middle ocellus has one vertical stripe below it (Fig. 8A–C); forewing is slightly shorter than apex of abdomen ([Supp. file 1](#): Fig. S6D–F); medial process of male epiphallus is lamellate, rectangular, medially concave, with a pair of acute angles at the lateral margin of the apex (Fig. 12G–I). Female. Ovipositor is slightly shorter than the cercus ([Supp. file 1](#): Fig. S13G–I); forewings are small, not overlapping each other, and their length is one-third of abdomen length ([Supp. file 1](#): Fig. S10V–X).

Material examined

CHINA – **Yunnan** • 4 ♂♂, 1 ♀; Yingjiang, Nabang; 24°44′47.4″ N; 97°34′3.0″ E; 24 Apr. 2018; Zhu-Qing He leg.; ECNU DM002, ECNU DM013, ECNU DM014, ECNU DM016, ECNU DM032 • 3 ♂♂, 5 ♀♀; same data as for preceding; 23 Aug. 2019; Zhu-Qing He leg.; ECNU 2111-DM003, ECNU 2113-DM007, ECNU 2121-DM015, ECNU 2114-DM022, ECNU 1211-DM026, ECNU 2112-DM030, ECNU 2124-DM033, ECNU 2122-DM034.

Redescription

Male

Brachypterous. Body size large. Head round, almost equal to pronotum in length; S1 and S2 absent (Fig. 8A–C); posterior area of the head densely covered with short hairs, S3, S4, S5 absent or very short and faint (Fig. 10D–F); S6 straight downward (Fig. 11D–F). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, no transverse stripes between lateral ocelli; patterns of lateral ocelli faint and blurry, extending towards the outer side of head. Antennal sockets located in the middle of frons, approximately triangular. Clypeus with several transverse wrinkles, median part of epistomal sulcus straight. Mandible length 0.43–0.47 times the height of the head. (Fig. 8A–C). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin straight, anterior and posterior margins with setae; dorsally covered with short setae, no patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with 1 arched vein inside; apical field narrow ([Supp. file 1](#): Fig. S6D–F). Hind tibiae: 6 spurs on the outer side, 6 spurs on the inner side, and 6 apical

spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed, thin, plate-like, with a notch in the middle; short setae present at apex of medial process; apices of both lobes flat and truncated, with sharp angles at the edges (Fig. 12G–I). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex rounded with setae (Fig. 16G–I). Ectoparamere lobe-shaped, abruptly narrow at apex, apex sharp, bending dorsad; inner margin at one-third of the distance from the apex obtuse (Fig. 15G–I).

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1V–X, S5J–L). An indistinct stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one indistinct longitudinal stripe (Supp. file 1: Fig. S13G–I). Forewings small, not overlapping each other, length one-third of abdomen length (Supp. file 1: Fig. S10V–X).

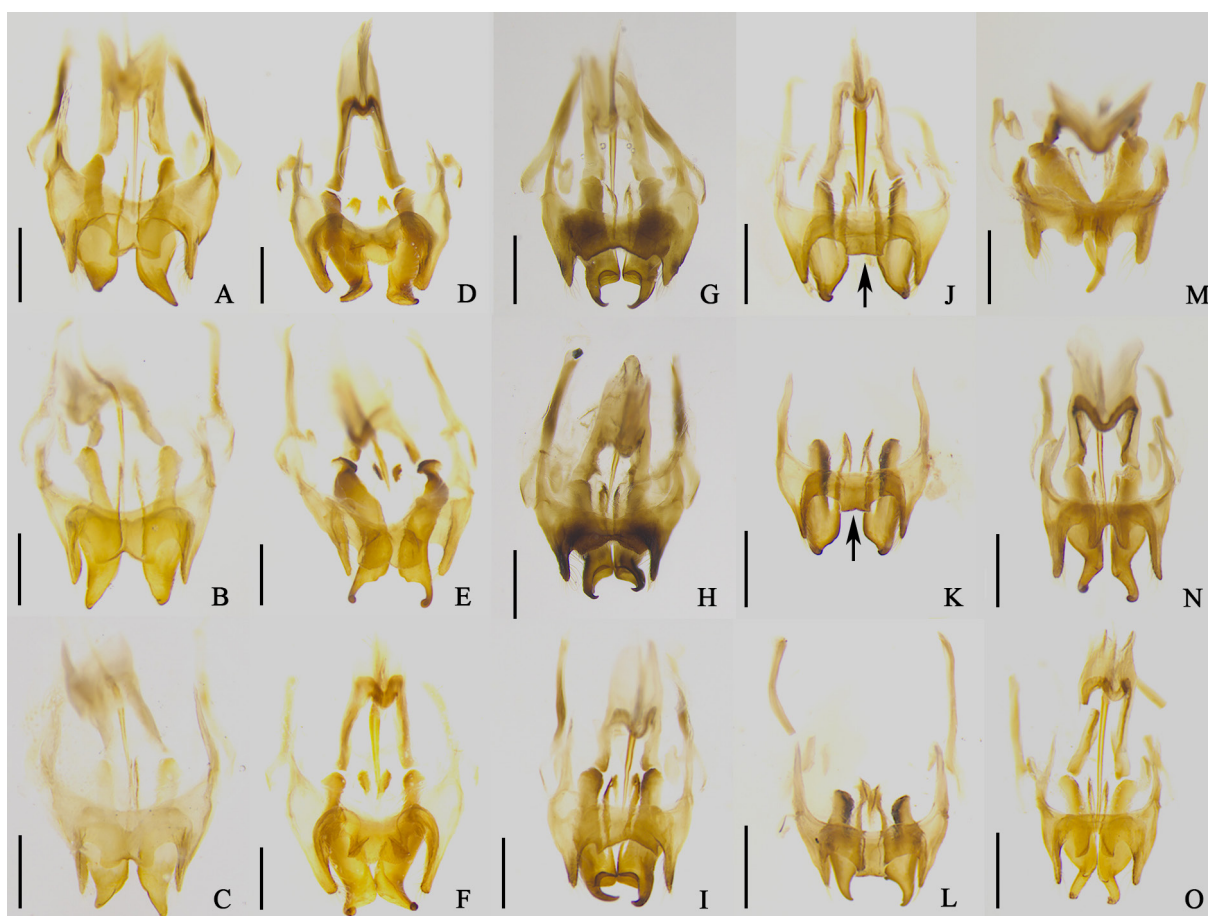


Fig. 11. Genitalia of male *Velarifictorus* Randell, 1964 in dorsal views. **A–C.** *V. (V.) micado* (Saussure, 1877). **D–F.** *V. (V.) flavifrons* Chopard, 1966. **G–I.** *V. (V.) aspersus* (Walker, 1869). **J–L.** *V. (V.) ornatus* (Shiraki, 1911). **M–O.** *V. (V.) agitatedus* Ma, 2019. **A.** ECNU 1011-DM055. **B.** ECNU 749-DM062. **C.** ECNU 4501-DM061. **D.** ECNU DM071. **E.** ECNU 405-DM052. **F.** ECNU 378-DM169. **G.** ECNU 4508-DM079. **H.** ECNU 733-DM103. **I.** ECNU 2238-DM038. **J.** ECNU 4784-DM067. **K.** ECNU 3943-DM051. **L.** ECNU 4785-DM068. **M.** ECNU 1482-DM048. **N.** ECNU 1387-DM049. **O.** ECNU DM112. Black arrows indicate: variations in the middle depression of the medial process of the male epiphallus. Scale bars = 0.5 mm.

Coloration

Body dark brown; eyes black, ocelli yellow; antennal sockets pale yellow; frons brown to black; pronotum dark brown to black; femora brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Measurements (mm)

BL♂18.1–21.9 ♀17.5–24.4; HL♂3.3–4.4 ♀3.5–4.6; HW♂6.1–7.5 ♀5.5–7.1; PL♂4.2–4.8 ♀4.3–4.7; PW♂6.0–7.3 ♀5.5–7.6; FWL♂10.2–11.4 ♀3.5–4.6; FWW♂6.3–6.5 ♀3.1–3.3; HFL♂15.5–17.3 ♀15.7–19.0; OVL♀12.1–14.2.

Distribution

China (Yunnan); Myanmar.

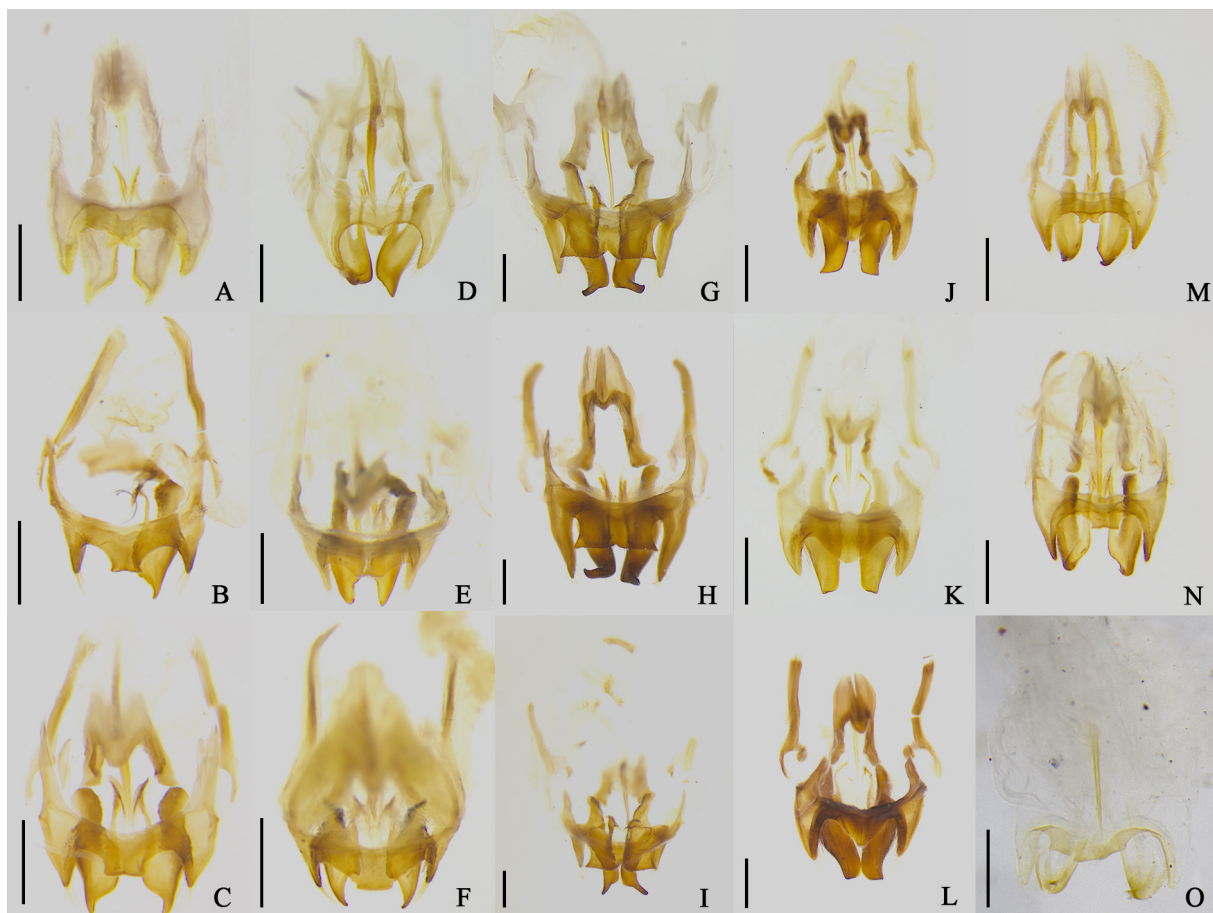


Fig. 12. Genitalia of male *Velarifictorus* Randell, 1964 in dorsal views. **A–C.** *V. (V.) dianxiensis* He, 2018; **D–E.** *V. (V.) beybienkoi* Gorochoy, 1985. **F.** *V. (V.) yinhaisheng* Di & He, 2025. **G–I.** *V. (V.) brunneri* (Chopard, 1969). **J–K.** *V. (V.) zhengi* Zheng & Ma, 2022. **L.** *V. (V.) triangularis* Ingrisch, 1998. **M–N.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **O.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU 1045-DM043. **B.** ECNU DM044 (the left ectoparamere is missing). **C.** ECNU DM111. **D.** ECNU 2092-DM117. **E.** ECNU DM504. **F.** ECNU 4514-DM009. **G.** ECNU 2123-DM013. **H.** ECNU 2111-DM003. **I.** ECNU DM014. **J.** ECNU 4250-DM004. **K.** ECNU 2023-DM017. **L.** ECNU 4515-DM005. **M.** ECNU DM506. **N.** ECNU DM507. **O.** ECNU 1212-DM509. Scale bars = 0.5 mm.

***Velarifictorus (Velarifictorus) dianxiensis* He, 2018**

Figs 3P–R, 6G–I, 7P–R, 12A–C, 15A–C, 16A–C

[Supp. file 1](#): Figs S1P–R, S3G–I, S5D–F, S7P–R, S10P–R, S13A–C

Chinese name: 滇西斗蟋

Velarifictorus (Velarifictorus) dianxiensis He in Chen *et al.*, 2018: 505.

Velarifictorus (Velarifictorus) dianxiensis – Zhao & Liu 2022: 247.

Diagnosis

Body size is small within the genus. S1 is thick (Fig. 6G–I), S2, S3, S4, S5 are present (Fig. 9P–R), S6 extends straight downward (Fig. 3P–R). Male. Middle ocellus has one vertical stripe below it (Fig. 6G–I); forewing is slightly shorter than apex of abdomen ([Supp. file 1](#): Fig. S7P–R); medial process of male epiphallus is lamellar and subtrapezoidal, with processes on both sides of terminal end, and is slightly concave in the middle (Fig. 12A–C). Female. Ovipositor is longer than cercus ([Supp. file 1](#): Fig. S13A–C); forewings do not overlap each other and reach only half the length of abdomen ([Supp. file 1](#): Fig. S10P–R).

Material examined

Holotype

CHINA • ♂; Yunnan, Yingjiang, Nabang; 24°44'47.4" N; 97°34'3.0" E; 24 Apr. 2018; Zhu-Qing He leg.; ECNU 1045-DM043.

Paratypes

CHINA • 1 ♂, 3 ♀♀; same data as for holotype; ECNU DM044 to ECNU DM047.

Redescription

Male

Brachypterous. Body size medium to small. Head round, almost equal to pronotum in length; S1 thick, with the same width at the sides as in the middle (Fig. 6G–I); posterior area of the head densely covered with short hairs, S2, S3, S4, S5 present (Fig. 9P–R), S6 straight downward (Fig. 3P–R). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, below middle ocellus with one vertical stripe. Antennal sockets located in the middle of frons, approximately circular. Clypeus smooth, median part of epistomal sulcus slightly concave. Mandible shorter than other parts of head (Fig. 6G–I). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae; dorsally covered with short setae, both sides with dot-like patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with one arched vein inside; apical field normal ([Supp. file 1](#): Fig. S7P–R). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed, apex sharp, bending ventrad, middle of lateral margin of each part with arched depression (Fig. 12A–C). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex rounded with setae (Fig. 16A–C). Ectoparamere lobe-shaped, relatively wide, apex sharp, bent dorsad; inner margin at one-third of the distance from the apex blunt (Fig. 15A–C).

Female

Brachypterous. Similar to male brachypterous in appearance ([Supp. file 1](#): Figs S1P–R, S5D–F). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal stripe ([Supp. file 1](#): Fig. S3G–I). Forewings not overlapping each other, reaching only half the length of abdomen ([Supp. file 1](#): Fig. S10P–R). Ovipositor longer than cercus ([Supp. file 1](#): Fig. S13A–C).

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets pale; frons black; stripe between ocelli yellow; vertex stripes yellow; pronotum with pale pattern on both sides at the front and rear ends; hind femora light brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Measurements (mm)

BL♂10.9–15.8 ♀12.3–13.1; HL♂2.1–2.3 ♀2.2–2.4; HW♂3.6–4.5 ♀3.7–3.9; PL♂1.8–2.7 ♀2.3–2.4; PW♂3.5–4.6 ♀3.6–4.3; FWL♂6.5–7.3 ♀2.9–3.4; FWW♂3.3–4.0 ♀1.8–2.3; HFL♂8.3–9.2 ♀8.0–8.2; OVL♀8.3–9.5.

Distribution

China (Yunnan).

Velarifictorus (Velarifictorus) flavifrons Chopard, 1966

Figs 3D–F, 5D–F, 9D–F, 11D–F, 13D–F, 14D–F

[Supp. file 1](#): Figs S1D–F, S2D–F, S4D–F, S7D–F, S9D–F, S10D–F, S11B, F.

Chinese name: 黄额斗蟋

Velarifictorus flavifrons Chopard in Chopard & Dreux, 1966: 607.

Scapsipedus sikkimensis Bhowmik, 1967: 126.

Scapsipedus bhadurii Bhowmik, 1967: 127.

Scapsipedus lohitensis Tandon & Shishodia, 1972: 281.

Velarifictorus dehradunensis Tandon & Shishodia, 1974: 299.

Velarifictorus jaintianus Biswas & Ghosh in Vasanth *et al.*, 1975: 221.

Velarifictorus yunnanensis Liu & Yin in Liu *et al.*, 1993: 90, 93.

Scapsipedus bhadurii – Bhowmik 1977: 229. — Vasanth 1982: 123. [synonymized by Vasanth 1982: 123]

Scapsipedus sikkimensis – Bhowmik 1978: 44. — Vasanth 1982: 123. [synonymized by Vasanth 1982: 123]

Scapsipedus lohitensis – Vasanth 1982: 123. [synonymized by Vasanth 1982: 123]

Velarifictorus dehradunensis – Bhowmik 1985: 30. [synonymized by Bhowmik 1985: 30]

Velarifictorus jaintianus – Bhowmik 1985: 37. [synonymized by Bhowmik 1985: 37]

Velarifictorus (Velarifictorus) flavifrons – Gorochov 2001: 319. — Shishodia *et al.* 2010: 212. — Kim & Pham 2014: 61. — Chen *et al.* 2018: 502. — Zhao & Liu 2022: 247.

Velarifictorus yunnanensis – Gorochov 2001: 321. [synonymized by Gorochov 2001: 321]

Diagnosis

Body size is medium within the genus. S1 is rather thick, extending below frontal suture, with equal width at both ends and in the middle (Fig. 5D–F). S2, S3, S4 and S5 are present (Fig. 9D–F), S6 extends to occiput, nearly forming a U shape (Fig. 3D–F). Male. A triangular mark is present below median ocellus (Fig. 5D–F); forewings are slightly shorter than end of abdomen ([Supp. file 1](#): Fig. S7D–F); medial process of male epiphallus divides into two semicircular lobes, the lateral margin folding ventrad (Fig. 11D–F). Female. Ovipositor exceeds cercus in length ([Supp. file 1](#): Fig. S9D–F); in brachypterous forms, forewings do not overlap each other and reach only half length of abdomen ([Supp. file 1](#): Fig. S10D–F); in macropterous forms, forewings overlap and are slightly shorter than apex of abdomen ([Supp. file 1](#): Fig. S11F).

Material examined

CHINA – **Guangxi** • 1 ♂; Jinxiu, Lianhuashan; 24°8'43.458" N; 110°10'38.446" E; 21 Jul. 2015; Zhu-Qing He leg.; ECNU DM071. – **Yunnan** • 2 ♂♂; Pu'er; 22°45'12.262" N; 100°59'17.588" E; 23 Apr. 2017; Zhu-Qing He leg.; ECNU 405-DM052, ECNU 378-DM169 • 2 ♂♂; Yingjiang, Nabang; 24°44.79' N; 97°34.05' E; elev. 570–950 m; 1 Jul. 2017; Zhu-Qing He leg.; ECNU 692-DM072, ECNU 693-DM177 • 1 ♂, 5 ♀♀; Xishuangbanna, Nabanhe; 22°8'51.331" N; 100°40'4.800" E; 30 Apr. 2017; Zhu-Qing He leg.; ECNU 535-DM073 to ECNU DM075, ECNU DM181 to ECNU 554-DM183 • 7 ♂♂; Gongshan, Dulongjiang, Maku; 27°41'18.031" N; 98°16'51.784" E; 21 Jun. 2015; Wen-Xuan Bi leg.; ECNU DM161 to ECNU DM167 • 1 ♂; Pu'er, Simao; 22°47'12.876" N; 100°58'37.794" E; 26 Jul. 2002; Kai Li leg.; ECNU DM168 • 1 ♂; Baoshan, Mangkuan; 25°28'38.402" N; 98°53'16.310" E; 28 Apr. 2018; Zhu-Qing He leg.; ECNU DM170 • 1 ♀; Dehong, Ruili; 24°4'11.474" N; 97°49'10.463" E; 25 Aug. 2019; Zhu-Qing He leg.; ECNU 2137-DM171 • 2 ♂♂; Xishuangbanna, Menglun Botanical Garden; 21°55'6.784" N; 101°16'24.665" E; 25 Apr. 2017; Zhu-Qing He leg.; ECNU 492-DM172, ECNU 434-

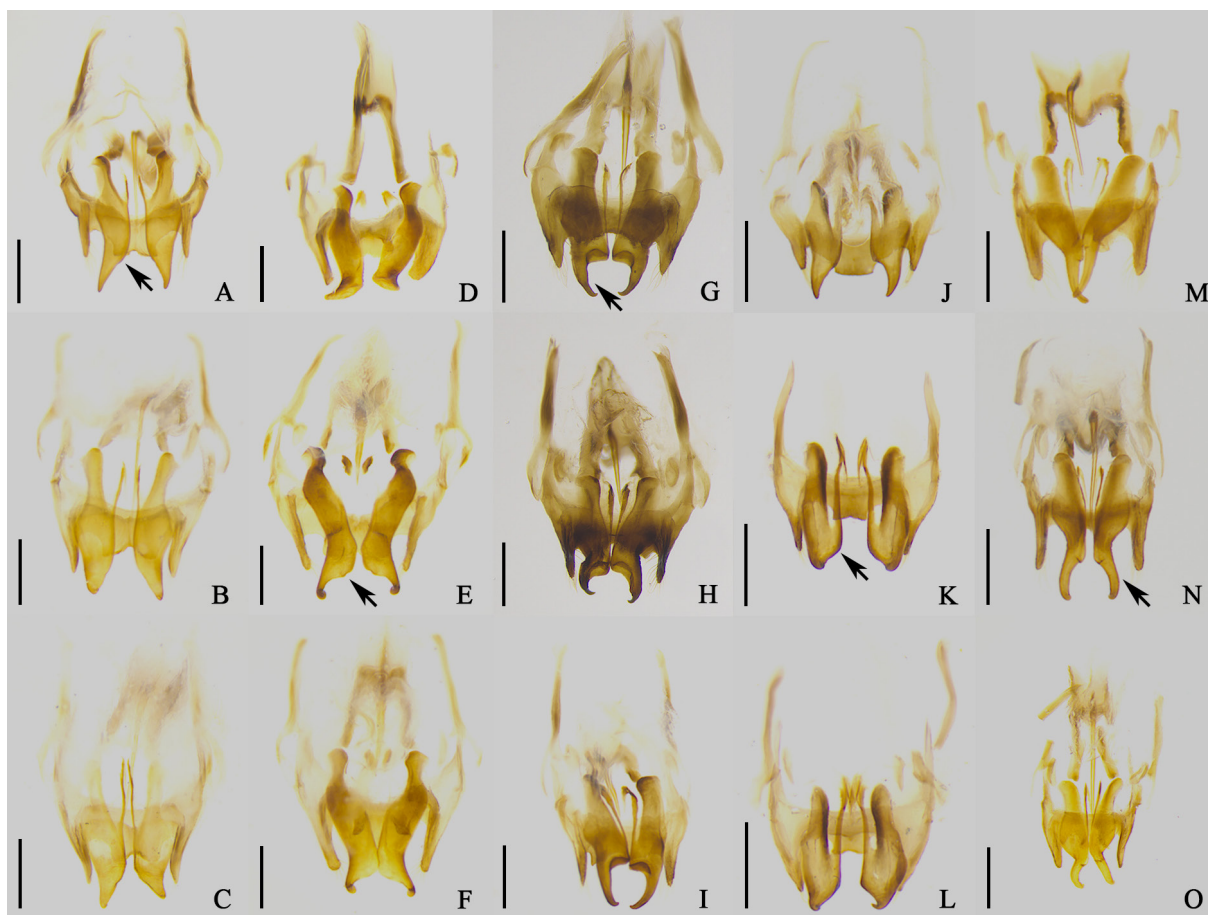


Fig. 13. Genitalia of male *Velarifictorus* Randell, 1964 in ventral views. A–C. *V. (V.) micado* (Saussure, 1877). D–F. *V. (V.) flavifrons* Chopard, 1966. G–I. *V. (V.) aspersus* (Walker, 1869). J–L. *V. (V.) ornatus* (Shiraki, 1911). M–O. *V. (V.) agitatedus* Ma, 2019. A. ECNU 1011-DM055. B. ECNU 749-DM062. C. ECNU 4501-DM061. D. ECNU DM071. E. ECNU 405-DM052. F. ECNU 378-DM169. G. ECNU 4508-DM079. H. ECNU 733-DM103. I. ECNU 2238-DM038. J. ECNU 4784-DM067. K. ECNU 3943-DM051. L. ECNU 4785-DM068. M. ECNU 1482-DM048. N. ECNU 1387-DM049. O. ECNU DM112. Black arrows indicate: A, E, G, K = one-third of the distance from the ectoparamere apex; N = male ectoparamere elongated and slender. Scale bars = 0.5 mm.

DM173 • 1 ♂; Ruili, Botanical Garden; 24°4'11.474" N; 97°49'10.463" E; 14 Aug. 2017; Zhu-Qing He leg.; ECNU 998-DM174 • 1 ♂; Wenshan, Xiaojie; 23°15'52.924" N; 104°2'1.241" E; 31 Jul. 2021; Jing-Song Zong leg.; ECNU 4102-DM175 • 1 ♂; Yingjiang, Nabang; 24°44'47.4" N; 97°34'3.0" E; 23 Aug. 2019; Zhu-Qing He leg.; ECNU 2198-DM176 • 2 ♂♂, 1 ♀; same data as for preceding; 24 Apr. 2018; Zhu-Qing He leg.; ECNU 1070-DM178 to ECNU DM180. – **Xizang** • 1 ♂, 3 ♀♀; Motuo, 80k; 29°39'6.808" N; 95°29'27.193" E; 10 Jul. 2023; Zhu-Qing He leg.; ECNU 5064-DM185 to ECNU 5068-DM188 • 2 ♂♂, 2 ♀♀; Motuo, Xiachayu; 28°28'2.150" N; 97°1'30.662" E; 9 Jul. 2023; Zhu-Qing He leg.; ECNU 4962-DM189 to ECNU 4965-DM192 • 6 ♂♂, 3 ♀♀; Motuo, Beibeng; 29°14'20.350" N; 95°10'14.700" E; 6 Jul. 2023; Zhu-Qing He leg.; ECNU 4913-DM193 to ECNU 4917-DM201.

Redescription

Male

Brachypterous. Body medium-sized. Head round, almost equal to pronotum in length. S1 rather thick, extending below the frontal suture (Fig. 5D–F); S2 present; posterior area of head densely covered with short hairs, S3, S4 and S5 present (Fig. 9D–F); S6 nearly U-shaped (Fig. 3D–F). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, below middle ocellus with a triangular pattern. Antennal sockets located in the middle of frons, approximately circular. Clypeus with several transverse wrinkles, median part of epistomal sulcus slightly concave. Mandible shorter than other parts of head (Fig. 5D–F). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae; dorsally covered with short setae, both sides with dot-like patterns; median with 1 groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with 1 arched vein inside; apical field normal (Supp. file 1: Fig. S7D–F). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed, thin plate-like, apex semi-circular with small teeth; central part with arched depression, lateral sides of the medial process fold ventrad (Figs 11D–F, 14D–F). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex rounded with setae (Fig. 14D–F). Ectoparamere lobe-shaped, wide at the base, abruptly narrow at one-third of the length from the base, apex finger-shaped and inwardly bent; inner margin at one-third of the distance from the apex with 1 small process (Fig. 13D–F).

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1D–F, S4D–F). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one thick longitudinal stripe (Supp. file 1: Fig. S2D–F). Forewings not overlapping each other, reaching only half the length of abdomen (Supp. file 1: Fig. S10D–F). Ovipositor exceeds cercus in length (Supp. file 1: Fig. S9D–F).

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets pale yellow; frons brown to black; stripe between ocelli yellow; vertex stripes yellow; pronotum with yellow spots; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual variation

There are individual differences in S1s of males. These differences can be observed in terms of thickness, with two distinct types as well as transitional types. Triangular pattern below median ocellus also exhibits individual variation. In some individuals, the pattern may not be clearly triangular in shape, but they still extend below antennal sockets. Individuals commonly observed as brachypterous, with reduced hindwings. Male macropterous: similar to male brachypterous in appearance, hindwings well

developed, folded in a tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S11B). Female macropterous: similar to female brachypterous in appearance, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S11F).

Measurements (mm)

BL♂16.2–18.1 ♀15.8–19.0; HL♂2.6–3.0 ♀2.3–2.6; HW♂4.6–5.0 ♀4.7–5.1; PL♂3.1–3.3 ♀3.1–3.8; PW♂5.0–5.2 ♀4.9–5.3; FWL♂8.8–9.9 ♀4.4–6.2 (brachypterous) 8.7–9.5 (macropterous); FWW♂4.1–5.0 ♀2.7–3.1 (brachypterous) 3.9–4.7 (macropterous); HWL♂18.9–19.1 ♀17.4–19.4 (macropterous); HFL♂10.6–11.2 ♀11.7–12.8; OVL♀11.3–12.1.

Distribution

China (Guangxi, Xizang, Yunnan); Bangladesh; Nepal.

Velarifictorus (Velarifictorus) liuxianwei Di & He, 2025

Figs 4L, 10L, 12O, 15O, 16O

Supp. file 1: Figs S1U, S5I, S6L, S10U, S12C, S13J

Chinese name: 刘氏斗蟋

Velarifictorus (Velarifictorus) liuxianwei Di & He in Di *et al.*, 2025: 7.

Material examined

Holotype

CHINA • ♂; Yunnan, Yingjiang, Nabang; 24°44'47.4" N; 97°34'3.0" E; 24 Apr. 2018; Zhu-Qing He leg.; ECNU 1212-DM509.

Paratype

CHINA • 1 ♀; same data as for holotype; ECNU 1429-DM027.

Diagnosis

This species can be recognized by: vertex without longitudinal stripes; the medial process of the epiphallus wide, approximately trapezoidal, with four corners and without notch in the middle of the apex (detailed differential diagnosis see Di *et al.* 2025).

Description

See detailed description in Di *et al.* (2025).

Distribution

China (Yunnan).

Velarifictorus (Velarifictorus) micado (Saussure, 1877)

Figs 3A–C, 5A–C, 9A–C, 11A–C, 13A–C, 14A–C

Supp. file 1: Figs S1A–C, S2A–C, S4A–C, S7A–C, S9A–C, S10A–C, S11A, E

Chinese name: 中华斗蟋

Common name: Chinese fighting cricket; Japanese burrowing cricket

Scapsipedus micado Saussure, 1877: 415.

Velarifictorus ryukyuensis Oshiro, 1990: 356. **syn. nov.**

Scapsipedus micado – Alexander & Walker 1962: 92.

Velarifictorus micado – Randell 1964: 1586. — Walker 1977: 308. — Gorochov 1983: 42. — Yin & Liu 1995: 62. — Xie 2004: 118. — Kim & Puskás 2012: 10. — He & Takeda 2013: 2. — Zeng & Zhu 2014: 1066–1071. — Li *et al.* 2016: 554. — Wang *et al.*, 2020: 1.

Velarifictorus ryukyuensis – Oshiro 1995: 69. — Ichikawa *et al.* 2000: 268.

Velarifictorus (Velarifictorus) micado – Gorochov 2001: 319. — Kim 2013: 297. — Kim & Pham 2014: 61. — Han *et al.* 2015: 22. — Storozhenko *et al.* 2015: 114. — Bowles 2018: 177. — Chen *et al.* 2018: 503. — Mulder & Gorochov 2019: 237. — Zhao & Liu 2022: 183.

Velarifictorus (Velarifictorus) ryukyuensis – Gu *et al.* 2018: 12. — He 2018: 530. — Zhao & Liu 2022: 248.

Diagnosis

Body size is medium within the genus. Male. S1 is either normal or extremely thick (Fig. 5A–C). S2 is not prominent, S3, S4, S5 are present (Fig. 9A–C). S6 is present and extends straight downward

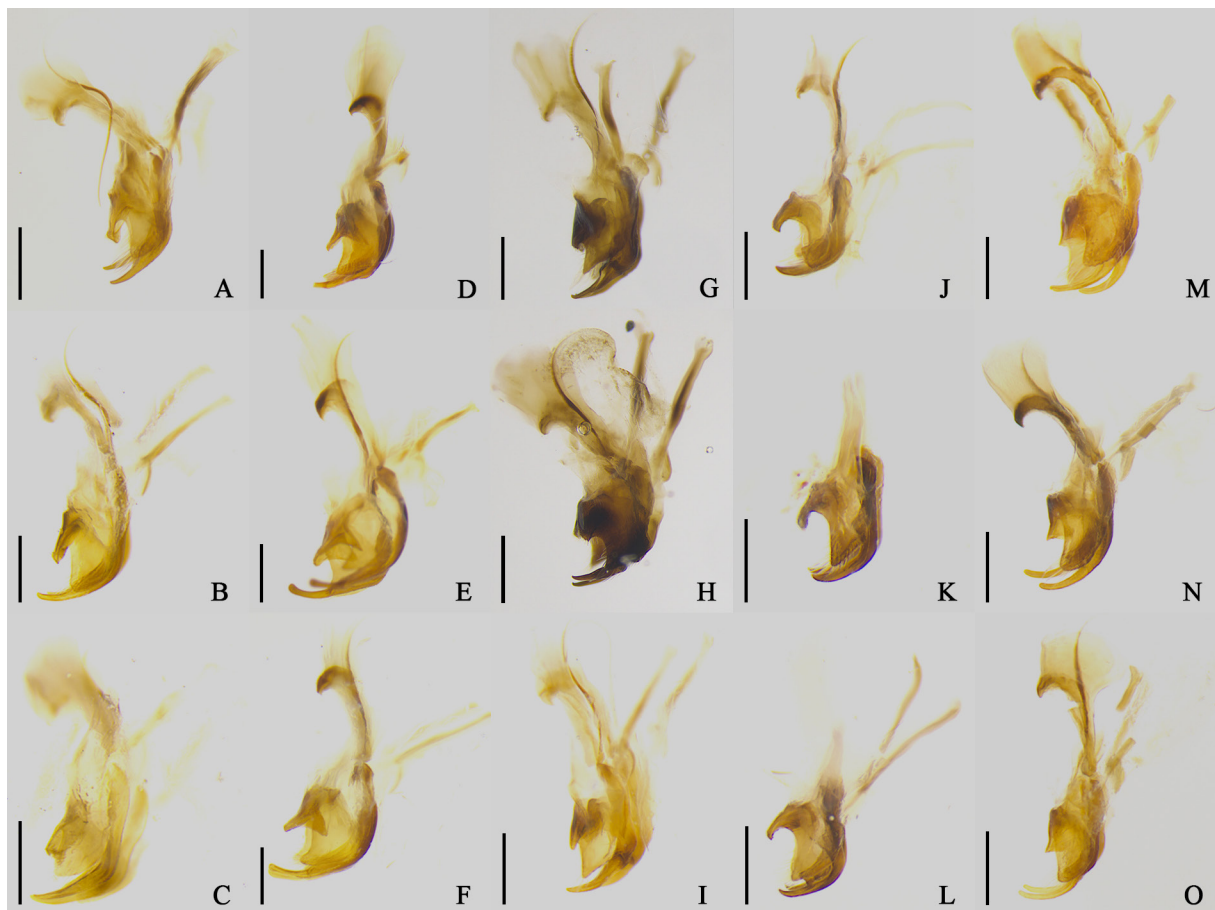


Fig. 14. Genitalia of male *Velarifictorus* Randell, 1964 in lateral views. **A–C.** *V. (V.) micado* (Saussure, 1877). **D–F.** *V. (V.) flavifrons* Chopard, 1966. **G–I.** *V. (V.) aspersus* (Walker, 1869). **J–L.** *V. (V.) ornatus* (Shiraki, 1911). **M–O.** *V. (V.) agitatedus* Ma, 2019. **A.** ECNU 1011-DM055. **B.** ECNU 749-DM062. **C.** ECNU 4501-DM061. **D.** ECNU DM071. **E.** ECNU 405-DM052. **F.** ECNU 378-DM169. **G.** ECNU 4508-DM079. **H.** ECNU 733-DM103. **I.** ECNU 2238-DM038. **J.** ECNU 4784-DM067. **K.** ECNU 3943-DM051. **L.** ECNU 4785-DM068. **M.** ECNU 1482-DM048. **N.** ECNU 1387-DM049. **O.** ECNU DM112. Scale bars = 0.5 mm.

(Fig. 3A–C). Male. No triangular pattern is present, or only vertical lines appear below middle ocellus (Fig. 5A–C); tegmina are slightly shorter than end of abdomen (Supp. file 1: Fig. S7A–C); medial process of epiphallus have two half-lobes, which fold ventrad at the apex (Fig. 11A–C). Female. Ovipositor exceeds cercus in length (Supp. file 1: Fig. S9A); in brachypterous forms, forewings do not overlap each other and reach only the half length of abdomen (Supp. file 1: Fig. S10A–C); in macropterous forms, forewings overlap and are slightly shorter than apex of abdomen (Supp. file 1: Fig. S11E).

Material examined

CHINA – **Beijing** • 1 ♂; Beijing; 40°0'18.479" N; 116°12'41.782" E; 30 Jul. 2017; Zhu-Qing He leg.; ECNU 1011-DM055. – **Fujian** • 1 ♀; Meihuashan; 25°20'50.586" N; 116°49'43.010" E; 26 Aug. 2006; Ling Chen leg.; ECNU DM419. – **Gansu** • 1 ♂; Wen County; 32°45'21.330" N; 105°15'10.141" E; 24 Aug. 1999; Kai Li leg.; ECNU DM346 • 7 ♂♂, 1 ♀; same data as for preceding; 29 Aug. 1999; Kai Li leg.; ECNU DM347 to ECNU DM354. – **Guangdong** • 1 ♂; Huizhou, Huiyang; 22°49'8.130" N; 114°27'42.133" E; 10 Oct. 2016; Zhu-Qing He leg.; ECNU 323-DM404. – **Guangxi** • 3 ♂♂; Jinxiu, Yingshan Park; 24°9'58.608" N; 110°14'54.348" E; 19 Jul. 2015; Zhu-Qing He and Hui Lu leg.; ECNU DM427 to ECNU DM429 • 1 ♂; Hechi, Yizhou; 24°29'31.576" N; 108°38'3.305" E; 15 Jul. 2015; Zhu-Qing He and Hui Lu leg.; ECNU DM430. – **Hainan** • 2 ♂♂; Jianfengling; 18°45'10.138" N; 108°53'19.709" E; 22 Jul. 2009; Zhu-Qing He leg.; ECNU DM417, ECNU DM418 • 1 ♀; same data as for preceding; 9 Aug. 2018; ECNU 1298DM420 • 1 ♂; Diaoluoshan; 18°43'42.582" N; 109°49'49.570" E; 6 Aug. 2021; Kai Li leg.; ECNU 4466-DM423 • 1 ♂; Tongguling; 19°39'57.528" N; 111°1'21.979" E; 4 Aug. 2018; Zhu-Qing He leg.; ECNU 1275-DM434. – **Hubei** • 1 ♂; Shennongjia, Songbai; 31°44'47.947" N; 110°39'43.207" E; 9 Aug. 1999; Kai Li leg.; ECNU DM345. – **Shaanxi** • 8 ♂♂; Weinan; 34°29'57.440" N; 109°30'49.385" E; 20 Aug. 1999; Kai Li leg.; ECNU DM355 to ECNU DM362 • 1 ♀; Hanzhong, Nanhu; 32°57'18.397" N; 106°53'33.857" E; 27 Jul. 2001; Kai Li leg.; ECNU DM365 • 6 ♂♂; Xi'an; 34°20'52.742" N; 108°57'24.527" E; 2 Sep. 2001; Kai Li leg.; ECNU DM385 to ECNU DM390 • 10 ♂♂; Ankang, Pingli; 32°22'56.510" N; 109°19'56.363" E; 17 Aug. 2001; Kai Li leg.; ECNU DM391 to ECNU DM400. – **Shandong** • 1 ♂; Dongying; 37°25'54.584" N; 118°40'27.257" E; 15 Aug. 2021; Zi-Ren Zhang leg.; ECNU 4501-DM061. – **Shanghai** • 3 ♀♀; Jinshan; 30°43'19.416" N; 121°21'55.080" E; 1 Oct. 2017; Zhu-Qing He leg.; ECNU DM063, ECNU DM065, ECNU 884-DM498 • 1 ♂; Chongming; 31°34'57.367" N; 121°38'29.904" E; 10 Aug. 2007; Kai Li leg.; ECNU DM366 • 1 ♂; Chongming, Qianwei; 31°43'9.298" N; 121°30'17.299" E; 23 Aug. 2010; Ye Shui-Song leg.; ECNU DM403 • 7 ♂♂, 9 ♀♀; Chongming, Xisha Wetland; 31°43'38.212" N; 121°14'2.811" E; 21 Sep. 2020; Jing-Song Zong leg.; ECNU DM473 to ECNU DM488 • 1 ♂; Minhang, East China Normal University; 31°2'1.046" N; 121°26'57.016" E; 7 Nov. 2020; Yang-Yang Hu leg.; ECNU DM489 • 1 ♂; Jinshan; 30°43'19.416" N; 121°21'55.080" E; 30 Aug. 2016; Zhu-Qing He leg.; ECNU DM490 • 1 ♂; Chongming; 31°34'57.367" N; 121°38'29.904" E; 18 Sep. 2017; Zhu-Qing He leg.; ECNU 804-DM495 • 1 ♂, 3 ♀♀; Chongming, Deyun; 31°32'42.937" N; 121°49'39.003" E; 20 Sep. 2020; Jing-Song Zong leg.; ECNU DM499 to ECNU DM502. – **Sichuan** • 2 ♂♂; Dazhou, Zhuyu; 32°12'3.899" N; 107°43'19.542" E; 14 Aug. 1999; Kai Li leg.; ECNU DM363, ECNU DM364 • 13 ♂♂; Guangyuan, Wangcang; 32°13'0.811" N; 106°17'53.318" E; 22 Aug. 1999; Kai Li leg.; ECNU DM367 to ECNU DM377, ECNU DM425, ECNU DM426. – **Yunnan** • 1 ♂, 1 ♀; Wenshan, Xiaojie; 23°15'52.924" N; 104°2'1.241" E; Jing-Song Zong leg.; 31 Jul. 2021; ECNU 4103DM421, ECNU 4100-DM422 • 1 ♂; Wenshan, Donggan; 23°21'20.718" N; 105°9'52.340" E; 9 Jul. 2021; Zhu-Qing He leg.; ECNU DM424 • 1 ♂; Kunming; 24°52'51.208" N; 102°49'47.676" E; 5 Sep. 2017; Zhu-Qing He leg.; ECNU 936-DM431 • 1 ♂; Nujiang, Dulongjiang; 27°39'49.086" N; 98°15'58.608" E; 22 Aug. 2019; Zhu-Qing He leg.; ECNU 2175-DM435. – **Zhejiang** • 1 ♂; Lin'an, Qingliangfeng; 30°6'28.735" N; 118°54'24.811" E; 28 Jul. 2016; Hui Lu leg.; ECNU 215-DM060 • 4 ♂♂, 2 ♀♀; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 25 Aug. 2008; Zhu-Qing He leg.; ECNU DM379 to ECNU DM384 • 1 ♂; Hangzhou, Lin'an, Xitianmushan; 30°19'47.420" N; 119°26'30.545" E; 22 Aug. 2016; Zhu-Qing He leg.; ECNU 313-DM401 • 1 ♂; same data as for preceding; 3 Jun. 2019; ECNU 2585-

DM402 • 2 ♂♂, Jiaxing; 30°45'49.086" N; 120°46'19.823" E; 26 Aug. 2007; Zhu-Qing He leg.; ECNU DM405, ECNU DM406 • 1 ♂; Lishui, Jinning, Wangdongyang; 27°40'44.278" N; 119°38'30.858" E; 15 Jul. 2017; Zhu-Qing He leg.; ECNU 600-DM409 • 3 ♂♂; Lishui, Baishanzu; 27°45'37.134" N; 119°15'1.069" E; 9 Sep. 2016; Zhu-Qing He leg.; ECNU 248-DM410 to ECNU DM412 • 3 ♂♂; same data as for preceding; 22 Sep. 2008; ECNU DM413 to ECNU DM415 • 1 ♂; Hangzhou, Jiande; 29°30'55.892" N; 119°19'19.417" E; 15 Jul. 2018; Zhu-Qing He leg.; ECNU 1187-DM416 • 6 ♂♂, 1 ♀; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 23 Sep. 2018; Bai-Qiu Wang leg.; ECNU DM436 to ECNU DM442 • 17 ♂♂, 13 ♀♀; Suichang, Jiulongshan; 28°24'24.718" N; 118°51'14.551" E; 22 May 2019; Di Tian leg.; ECNU 2579-DM443 to ECNU 2539-DM472 • 1 ♂; Hangzhou, Lin'an, Qingliangfeng; 30°6'28.735" N; 118°54'24.811" E; 26 Jul. 2017; Zhu-Qing He leg.; ECNU 919-DM491 • 4 ♂♂; Baimashan; 27°45'37.134" N; 119°15'1.069" E; 9 Sep. 2017; Zhu-Qing He leg.; ECNU 749-DM062, ECNU 750-DM492, ECNU DM496, ECNU DM497 • 1 ♂; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 22 Aug. 2008; Zhu-Qing He leg.; ECNU DM493 • 1 ♂; same data as for preceding; 25 Aug. 2016; ECNU 217-DM494 • 1 ♀; same data as for preceding; 26 Jun. 2012; Jing Wen leg.; ECNU DM503.

Redescription

Male

Brachypterous. Body medium-sized. Head round, almost equal to pronotum in length; S1 narrowing from both sides to the middle (Fig. 5A, C) or thick (Fig. 5B); S2 inconspicuous; posterior area of head densely covered with short hairs, S3 to S5 present (Fig. 9A–C); S6 straight downward (Fig. 3A–C). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, no triangular pattern or only vertical lines below middle ocellus (Fig. 5A–C). Antennal sockets located in the middle of frons, approximately circular. Clypeus with several transverse wrinkles, median part of the epistomal sulcus slightly concaved. Mandible shorter than other parts of head (Fig. 5A–C). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae, dorsally covered with short setae, both sides with dot-like patterns, median with 1 groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with 1 arched vein inside; apical field normal (Supp. file 1: Fig. S7A–C). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus bilobed with two half lobes, apex folded ventrad (Figs 11A–C, 14A–C). Lateral lobe of epiphallus sheet-like, anterior side relatively straight, posterior side curved dorsad in an arch, gradually narrowing from base to apex, apex rounded with setae (Fig. 14A–C). Ectoparamere lobe-shaped, curved dorsad, gradually narrowing from middle to apex, apex rounded; inner margin at one-third of the distance from the apex without distinct process (Fig. 13A–C).

Female

Similar to male brachypterous in appearance (Supp. file 1: Figs S1A–C, S4A–C). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal stripe (Supp. file 1: Fig. S2A–C). In brachypterous forms, forewings not overlapping each other, reaching only half the length of the abdomen (Supp. file 1: Fig. S10A–C). Ovipositor exceeds cercus in length (Supp. file 1: Fig. S9A–C).

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets white or pale yellow; frons brown to black; stripe between ocelli white to yellow; vertex stripes white to orange-red; pronotum with yellow spots; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual differences

S1 of male is normal or extremely thick (Fig. 5B). Individuals are commonly observed as brachypterous, with reduced hindwings, while some individuals are macropterous. Male macropterous: similar to male brachypterous in appearance; hindwings well developed, folded in a tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S11A). Female macropterous: similar to female brachypterous in appearance; forewings overlapping, slightly shorter than apex of abdomen, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen (Supp. file 1: Fig. S11E).

Measurements (mm)

BL♂15.4–17.2 ♀15.0–17.0; HL♂2.5–3.0 ♀2.5–3.1; HW♂4.6–5.7 ♀4.5–5.2; PL♂2.6–3.0 ♀2.9–3.3; PW♂4.6–5.6 ♀4.5–5.2; FWL♂7.4–10.2 ♀6.1–8.0 (brachypterous) 7.5–10.1 (macropterous); FWW♂4.4–5.1 ♀3.1–3.2 (brachypterous) 4.3–4.9 (macropterous); HWL♂17.8–18.7 ♀17.6–20.8 (macropterous); HFL♂9.5–11.2 ♀9.5–12.5; OVL♀11.2–13.2.

Distribution

China (Anhui, Beijing, Fujian, Gansu, Guangdong, Guangxi, Guizhou, Hainan, Hebei, Hongkong, Hubei, Hunan, Jilin, Jiangxi, Liaoning, Shanxi, Shaanxi, Shandong, Shanghai, Sichuan, Taiwan, Xizang, Yunnan, Zhejiang); Georgia; Indonesia (Sulawesi Island); India; Japan; North Korea; Russia; South Korea; Sri Lanka; USA (Alabama, Arkansas, Delaware, Florida, Georgia, Illinois, Iowa, Kansas, Michigan, Mississippi, Missouri, New York, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Texas, Virginia, Washington); Vietnam.

Velarifictorus (Velarifictorus) ornatus (Shiraki, 1911)

Figs 3J–L, 6A–C, 9J–L, 11J–L, 13J–L, 14J–L

Supp. file 1: Figs S1J–L, S3A–C, S4J–L, S7J–L, S9J–L, S10J–L, S11D, G.

Chinese name: 丽斗蟋

Gryllus ornatus Shiraki, 1911: 52.

Gryllus caudatus Shiraki, 1930: 212.

Velarifictorus ornatus – Yin & Liu 1995: 62. — Ichikawa *et al.* 2000: 268.

Velarifictorus (Velarifictorus) ornatus – Gorochov 2001: 319. — Kim 2013: 298. — Storozhenko *et al.* 2015: 118. — He 2018: 521. — Zhao & Liu 2022: 248.

Gryllus caudatus – He 2018: 530. [synonymized by He 2018: 530]

Non *Velarifictorus khasiensis* – Gorochov 1985: 91. — Woo *et al.* 1992: 73. — Woo & Wang 1999: 107. [misidentification in literature by this study]

Non *Velarifictorus hemelytrus* – Yin & Liu 1995: 61. — Yang *et al.* 2016: 529–541. [misidentification in literature by Chen *et al.* 2018: 499]

Diagnosis

Body size is small within the genus. S1 and S2 are absent (Fig. 6A–C), with S3, S4 and S5 less divergent (Fig. 9J–L), S6 extends straight downward (Fig. 3J–L). Male. Middle ocellus has one vertical stripe below or no markings (Fig. 6A–C); forewing length is approximately 0.67 as long as abdomen (Supp. file 1: Fig. S7J–L); medial process of male epiphallus is rectangular, lamellate, and slightly concave in the middle (Fig. 11J–L). Female. Ovipositor is longer than cercus (Supp. file 1: Fig. S9J–L); in brachypterous forms, forewings do not overlap each other and reach only half the length of abdomen (Supp. file 1: Fig. S10J–L); in macropterous forms, forewings partially overlap and are slightly shorter than the apex of the abdomen (Supp. file 1: Fig. S11G).

Material examined

CHINA – **Beijing** • 1 ♂; Fenghuangling; 40°6'16.549" N; 116°4'47.728" E; 25 Jul. 2018; Zhu-Qing He leg.; ECNU 1217-DM316. – **Chongqing** • 1 ♂; Jinfoshan; 29°2'54.445" N; 107°7'38.294" E; 16 Jul. 2020; Zhu-Qing He leg.; ECNU 3273-DM303. – **Guangxi** • 2 ♂♂; Zhaoping, Qichong; 24°15'27.363" N; 110°48'20.268" E; 30 Jun. 2023; Mi Di leg.; ECNU 4784-DM67, ECNU 4785-DM068 • 2 ♂♂, 2 ♀♀; Guangxi, Yulin, Darongshan; 22°42'8.255" N; 110°20'40.322" E; elev. 1000 m; 13 May 2022; Xiao-Yu Zhu leg.; ECNU 4662-DM069 to ECNU 4663-DM272 • 3 ♂♂; Baise, Laoshan Forest Farm; 24°17'48.761" N; 106°20'13.639" E; 10 Aug. 2000; Kai Li leg.; ECNU DM306 to ECNU DM308 • 2 ♂♂; Qinzhou; 21°58'47.759" N; 108°39'14.926" E; 20 Feb. 2019; Chu-Ze Shen leg.; ECNU 1901-DM326, ECNU 1902-DM327. – **Hainan** • 1 ♂; Ledong, Jianfengling; 18°45'10.138" N; 108°53'19.709" E; 22 Jul. 2009; Zhu-Qing He leg.; ECNU DM328. – **Hubei** • 2 ♂♂; Shennongjia; 31°44'47.947" N; 110°39'43.207" E; 11 Aug. 1999; Kai Li leg.; ECNU DM312, ECNU DM314. – **Jiangsu** • 2 ♂♂, 2 ♀♀; Jurong, Baohuashan; 32°7'47.057" N; 119°4'43.446" E; 21 Jun. 2021; Jing-Song Zong and Hui-Cong Xie leg.; ECNU DM167, ECNU DM268 to ECNU DM270 • 6 ♂♂, 4 ♀♀; Huai'an, Tieshan Temple; 32°44'25.537" N; 118°29'19.320" E; 20 Jun. 2021; Jing-Song Zong and Hui-Cong Xie leg.; ECNU DM273 to ECNU DM280, ECNU 3901-DM324, ECNU DM325 • 3 ♂♂, 1 ♀; Xuzhou, Yulongshan; 34°14'35.632" N; 117°11'0.575" E; 18 Jun. 2021; Jing-Song Zong and Hui-Cong Xie leg.; ECNU 3937-DM281 to ECNU DM284 • 1 ♀; Xuzhou, Quanshan Forest Park; 34°12'23.213" N; 117°9'41.026" E; 17 Jun. 2021; Jing-Song Zong leg.; ECNU DM304 • 1 ♀; Hai'an, Laobagang; 32°34'53.803" N; 120°49'58.858" E; 1 Jun. 2000; Qi Dai leg.; ECNU DM317. – **Shaanxi** • 2 ♂♂; Xi'an; 34°20'52.742" N; 108°57'24.527" E; 2 Sep. 2001; Kai Li leg.; ECNU DM310, ECNU DM311. – **Shandong** • 3 ♂♂, 3 ♀♀; Jining, Weishan Lake; 34°41'22.747" N; 117°16'58.476" E; 16 Jun. 2021; Hui-Cong Xie leg.; ECNU 3943-DM051, ECNU 3944-DM285 to ECNU DM289. – **Shanghai** • 6 ♂♂; Minhang, Pujiang Suburban Park; 31°3'30.948" N; 121°29'15.826" E; 30 May 2023; Zhu-Qing He and Mi Di leg.; ECNU DM290 to ECNU DM295 • 1 ♀; Chongming; 31°34'57.367" N; 121°38'29.904" E; 23 Jun. 2017; Zhu-Qing He leg.; ECNU 559-DM331 • 2 ♀♀; Caojing Town, Zengfeng; 30°46'13.963" N; 121°23'56.399" E; 22 Jun. 2014; Zhu-Qing He leg.; ECNU DM334, ECNU DM335. – **Taiwan** • 1 ♀; Lvdao Beauty Station; 22°46'1.027" N; 121°9'32.122" E; 9 May 2018; Hai-Tian Song leg.; ECNU 3300-DM318. – **Yunnan** • 1 ♂; Xishuangbanna, Nabanhe; 22°8'51.331" N; 100°40'4.800" E; elev. 1100 m; 8 May 2009; Jia-Yao Hu and Zi-Wei Yin leg.; ECNU DM301 • 1 ♂; Xishuangbanna; 21°55'6.784" N; 101°16'24.665" E; 5 May 2021; Jun Wang; ECNU 3881-DM305. – **Zhejiang** • 5 ♂♂; Hangzhou, Lin'an, Xitianmushan; 30°19'47.420" N; 119°26'30.545" E; 3 Jun. 2019; Tian Di leg.; ECNU 2587-DM262 to ECNU 2591-DM266 • 3 ♂♂, 1 ♀; Hangzhou, Lin'an, Qingliangfeng; 30°6'28.735" N; 118°54'24.811" E; 28 Jul. 2016; Zhu-Qing He and Hui Lu leg.; ECNU DM296 to ECNU DM298, ECNU 780-DM302 • 3 ♀♀; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 27 Jun. 2020; Jing-Song Zong leg.; ECNU 3021-DM299, ECNU DM300, ECNU 3023-DM330 • 1 ♀; Hangzhou, Lin'an, Qingliangfeng; 30°6'28.735" N; 118°54'24.811" E; 26 Jul. 2017; Zhu-Qing He leg.; ECNU 779-DM315 • 1 ♀; Ningbo, Tiantongshan; 29°48'17.345" N; 121°47'46.241" E; 4 Jul. 2017; Hui Lu leg.; ECNU 565-DM319 • 1 ♂, 3 ♀♀; Lishui, Jingning; 27°58'23.923" N; 119°38'8.509" E; 31 May 2021; Jia-Yao Hu leg.; ECNU 3954-DM320 to ECNU DM323 • 2 ♀♀; Suichang, Jiulongshan; 28°24'24.718" N; 118°51'14.551" E; 21 May 2019; Di Tian leg.; ECNU 2521-DM332, ECNU 2548-DM333.

Redescription

Male

Brachypterous. Body rather small. Head round, almost equal to pronotum in length; S1 and S2 absent (Figs 3J–L, 6A–C); posterior area of head densely covered with short hairs, S3, S4, S5 present, short (Fig. 9J–L). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, below middle ocellus with or without one vertical line. Antennal sockets located in the middle of frons, approximately triangular. Clypeus with several transverse wrinkles, median part of epistomal sulcus not

concave. Mandible length 0.35–0.40 times the height of the head. (Fig. 3J–L). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin slightly convex, anterior and posterior margins with setae; dorsally covered with short setae, both sides with dot-like patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly rectangular with one arched vein inside; apical field narrow (Supp. file 1: Fig. S7J–L). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus sheet-like, square-shaped, middle with slightly curved depression or no depression; apex of both sides right angle or relatively sharp (Fig. 11J–L). Lateral lobe of epiphallus sheet-like, gradually narrowing from base to apex, apex slightly sharpened with setae (Fig. 14J–L). Ectoparamere lobe-shaped at base, apex sharp; inner margin at one-third of the distance from the apex blunt and curved (Fig. 13J–L).

Female

Brachypterous. Similar to male brachypterous in appearance (Supp. file 1: Figs S1J–L, S4J–L). A stripe extends above the epistomal sulcus, between median ocellus and epistomal sulcus with one longitudinal stripe (Supp. file 1: Fig. S3A–C). Forewings not overlapping each other, reaching only half the length of abdomen (Supp. file 1: Fig. S10J–L). Ovipositor longer than cercus (Supp. file 1: Fig. S9J–L).

Coloration

Body brown; eyes black, ocelli pale yellow; antennal sockets pale; frons black; vertex stripes yellow; pronotum with yellow spots; hind femora light brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Individual variation

Medial process of the male epiphallus may have a depression in the center at the apex, while some are nearly rectangular (Fig. 11J–K). Individuals commonly observed as brachypterous, forewings rather short, with reduced hindwings, while some individuals are macropterous. Male macropterous: similar to male brachypterous in appearance, hindwings well developed, folded in a tail-like manner, longer than apex of abdomen, apical field regular (Supp. file 1: Fig. S11D). Female macropterous: similar to female brachypterous in appearance, forewings partially overlapping, slightly shorter than apex of abdomen (Supp. file 1: Fig. S11G).

Measurements (mm)

BL♂13.5–16.0 ♀11.1–12.3; HL♂2.3–2.4 ♀2.3–2.5; HW♂4.1–4.5 ♀3.9–4.1; PL♂2.5–2.6 ♀2.0–2.5; PW♂4.0–4.6 ♀3.8–4.0; FWL♂4.6–8.3 ♀4.9–5.1 (brachypterous) 6.6–7.3 (macropterous); FWW♂2.3–4.2 ♀2.0–2.2 (brachypterous) 2.9–3.5 (macropterous); HWL♂17.1 ♀16.2–16.7 (macropterous); HFL♂8.4–9.3 ♀7.8–8.5; OVL♀8.5–8.6.

Distribution

China (Beijing, Chongqing, Guangxi, Guizhou, Hainan, Henan, Hubei, Hunan, Jiangsu, Jiangxi, Shandong, Shaanxi, Shanghai, Sichuan, Taiwan, Yunnan, Zhejiang); Japan; Korea.

***Velarifictorus (Velarifictorus) triangularis* Ingrisch, 1998**

Figs 4I, 7D, 10I, 12L, 15L, 16L

Supp. file 1: Fig. S6I

Chinese name: 三角斗蟋

Velarifictorus triangularis Ingrisch, 1998: 323.

Velarifictorus (Velarifictorus) triangularis – Gorochoy 2001: 319.

Diagnosis

Male. Body size is medium within the genus. S1, S2, S3, S4, S5, S6 are absent. Middle ocellus has one vertical stripe below it. Forewing is slightly shorter than apex of abdomen. Medial process of male epiphallus is lamellate and triangular, with sides not extending to the lateral lobes of epiphallus.

Material examined

CHINA • 1 ♂, 1 nymph; Yunnan, Xishuangbanna, Jinghong, Bakaxiaozhai; 21°57'48.179" N; 101°12'44.348" E; 14 Jul. 2021; Zhu-Qing He leg.; ECNU 4515-DM005, ECNU 4310-DM024.

Redescription

Male

Brachypterous. Body size medium. Head rounded, almost equal to pronotum in length; S1, S2, S3, S4, S5, S6 absent (Figs 4I, 7D, 10I). Posterior area of head densely covered with short hairs. Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, patterns of lateral ocelli faint; below middle ocellus with faint pattern (may be individual variation). Antennal sockets located in the middle of frons, nearly triangular. Clypeus with several transverse wrinkles, median part of epistomal sulcus concave. Mandible length 0.47 times the height of the head. (Fig. 7D). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin straight, anterior and posterior margins with setae; dorsally covered with short setae, nearly no patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly trapezium with no vein inside; apical field narrow, wing chambers irregular (Supp. file 1: Fig. S6I). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus triangular, apex acute with setae (Fig. 12L). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex rather sharp with setae (Fig. 16L). Ectoparamere lobe-shaped, wider in the middle and tapering to a sharper apex, bending dorsad; inner margin at one-third of the distance from the apex without distinct process (Fig. 15L).

Female

Not examined.

Coloration

Body brown; eyes black, ocelli yellow; antennal sockets yellow; frons black; pronotum dark brown; femora brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Measurements (mm)

BL♂16.8; HL♂3.0; HW♂4.6; PL♂2.7; PW♂4.7; FWL♂8.4; FWW♂5.0; HFL♂12.3.

Distribution

China (Yunnan); Thailand.

Velarifictorus (Velarifictorus) yinhaisheng Di & He, 2025

Figs 4C, 7C, 10C, 12F, 15F, 16F

Supp. file 1: Fig. S6C

Chinese name: 殷氏斗蟋

Velarifictorus (Velarifictorus) yinhaisheng Di & He in Di *et al.*, 2025: 5.

Material examined

Holotype

CHINA • ♂; Yunnan, Jinghong, Mengla, Bakaxiaozhai; 21°57'48.179" N; 101°12'44.348" E; 14 Jul. 2021; Zhu-Qing He leg.; ECNU 4514-DM009.

Diagnosis

This species can be recognized by: vertex without longitudinal stripes; the medial process of the epiphallus wide, approximately trapezoidal, with two corners and without notch in the middle of the apex; the connection between the medial process of the epiphallus and the lateral lobe of the epiphallus is straight (detailed differential diagnosis see Di *et al.*, 2025).

Description

See detailed description in Di *et al.* (2025).

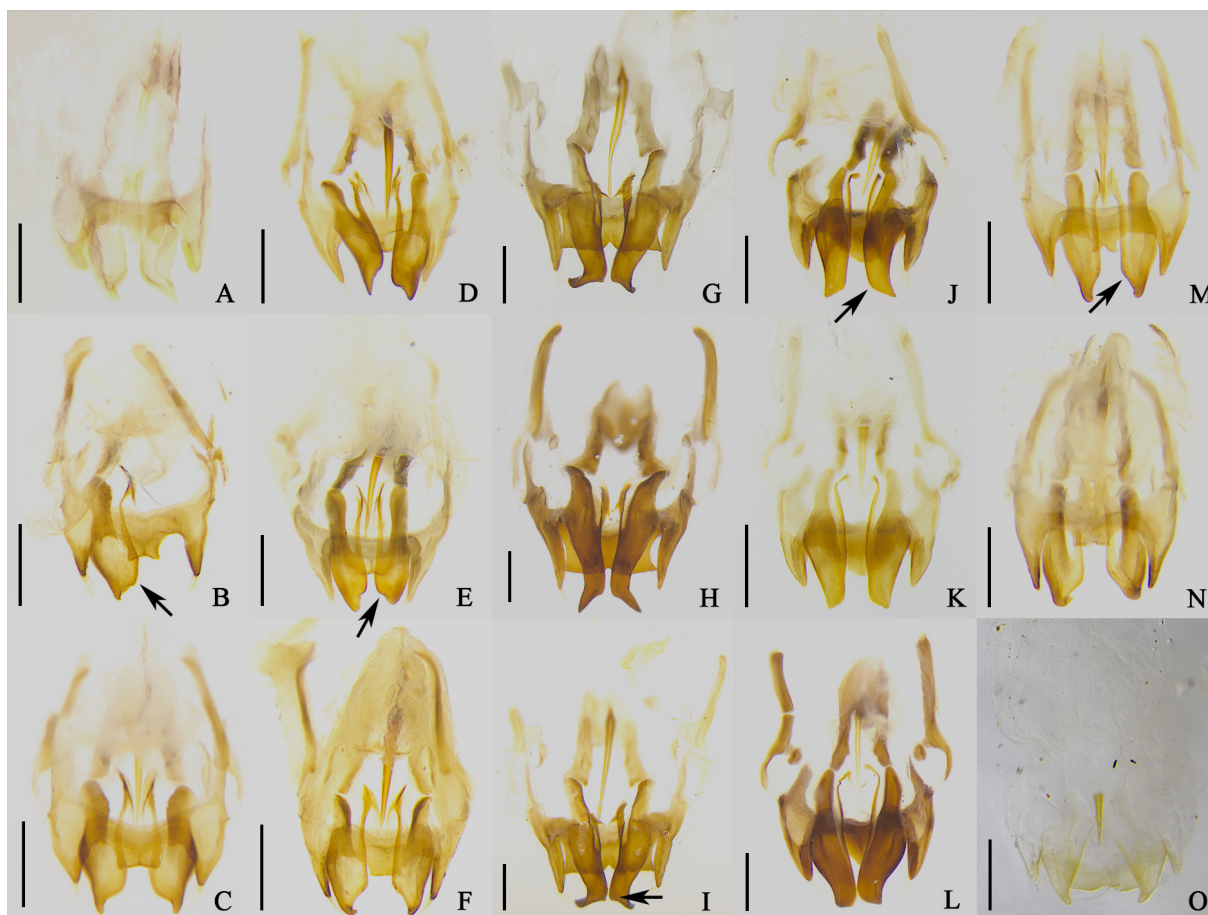


Fig. 15. Genitalia of male *Velarifictorus* Randell, 1964 in ventral views. **A–C.** *V. (V.) dianxiensis* He, 2018. **D–E.** *V. (V.) beybienkoi* Gorochoy, 1985. **F.** *V. (V.) yinhaisheng* Di & He, 2025. **G–I.** *V. (V.) brunneri* (Chopard, 1969). **J–K.** *V. (V.) zhengi* Zheng & Ma, 2022. **L.** *V. (V.) triangularis* Ingrisch, 1998. **M–N.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **O.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU 1045-DM043. **B.** ECNU DM044 (the left ectoparamere is missing). **C.** ECNU DM111. **D.** ECNU 2092-DM117. **E.** ECNU DM504. **F.** ECNU 4514-DM009. **G.** ECNU 2123-DM013. **H.** ECNU 2123-DM013. **I.** ECNU DM014. **J.** ECNU 4250-DM004. **K.** ECNU 2023-DM017. **L.** ECNU 4515-DM005. **M.** ECNU DM506. **N.** ECNU DM507. **O.** ECNU 1212-DM509. Black arrows indicate: one-third of the distance from the ectoparamere apex. Scale bars = 0.5 mm.

Distribution

China (Yunnan).

Velarifictorus (Velarifictorus) zhengi Zheng & Ma, 2022

Figs 4G–H, 8D–E, 10G–H, 12J–K, 15J–K, 16J–K

[Supp. file 1](#): Fig. S6G–H

Chinese name: 郑氏斗蟋

Velarifictorus (Velarifictorus) zhengi Zheng & Ma in Zheng *et al.*, 2022: 103.

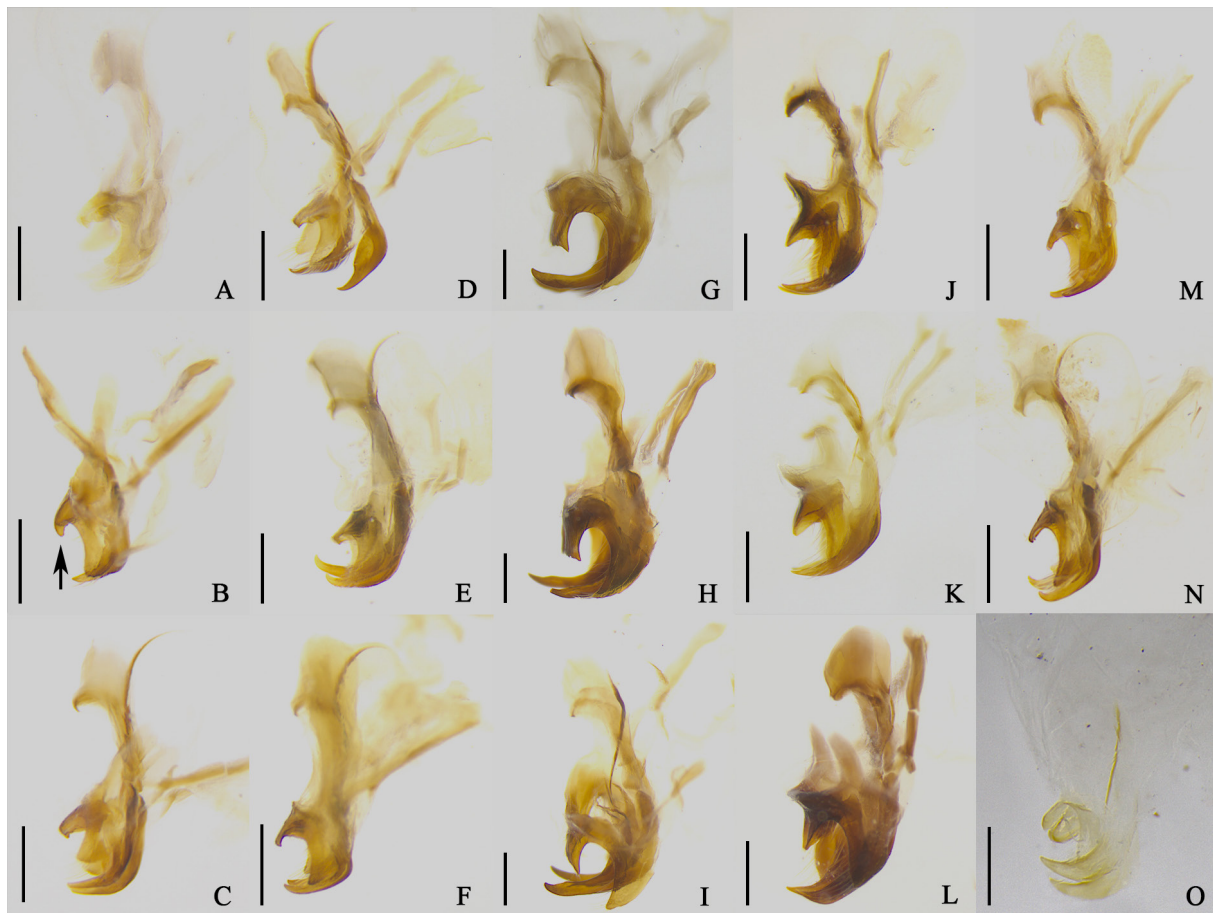


Fig. 16. Genitalia of male *Velarifictorus* Randell, 1964 in lateral views. **A–C.** *V. (V.) dianxiensis* He, 2018. **D–E.** *V. (V.) beybienkoi* Gorochoy, 1985. **F.** *V. (V.) yinhaisheng* Di & He, 2025. **G–I.** *V. (V.) brunneri* (Chopard, 1969). **J–K.** *V. (V.) zhengi* Zheng & Ma, 2022. **L.** *V. (V.) triangularis* Ingrisch, 1998. **M–N.** *V. (V.) bannaensis* Zhang, Liu & Shi, 2017. **O.** *V. (V.) liuxianwei* Di & He, 2025. **A.** ECNU 1045-DM043. **B.** ECNU DM044. **C.** ECNU DM111. **D.** ECNU 2092-DM117. **E.** ECNU DM504. **F.** ECNU 4514-DM009. **G.** ECNU 2123-DM013. **H.** ECNU 2123-DM013. **I.** ECNU DM014. **J.** ECNU 4250-DM004. **K.** ECNU 2023-DM017. **L.** ECNU 4515-DM005. **M.** ECNU DM506. **N.** ECNU DM507. **O.** ECNU 1212-DM509. The black arrow indicates the apex of the medial process of the epiphallus bending ventrad. Scale bars = 0.5 mm.

Diagnosis

Male. Body size is medium within the genus. S1, S2, S3, S4 are absent, S5 indistinct, S6 is present but not prominent. Middle ocellus has one vertical stripe below. Forewing is slightly shorter than apex of abdomen. Medial process of male epiphallus is lamellate and triangular, extending on both sides to the lateral lobes of epiphallus.

Material examined

CHINA – Yunnan • 1 ♂; Pu'er; 22°45'12.262" N; 100°59'17.588" E; 13 Jul. 2021; Zhu-Qing He leg.; ECNU 4250-DM004 • 2 ♂♂; Pu'er; 22°45'17.784" N; 100°59'19.554" E; 28 Feb. 2019; Xiao-Yu Zhu leg.; ECNU 2022-DM035, ECNU 2023-DM017.

THAILAND • 1 ♂; Chiang Mai, Doi Suthep-Pui, Bhubing Palace; 18°48'21" N; 98°53'52" E; elev. 1305 m; 1 Oct. 2017; Xiao-Yu Zhu leg.; ECNU 975-DM008.

Redescription**Male**

Brachypterous. Body size medium. Head wide and flattened, almost equal to pronotum in length; S1 absent (Fig. 8D–E); posterior area of the head densely covered with short hairs, S3 and S4 absent, S5 indistinct (Fig. 10G–H), S6 present, not prominent (Fig. 4G, H). Eyes oval, contiguous with antennal sockets; ocelli arranged in an inverted triangle, no transverse stripes between the lateral ocelli; patterns of lateral ocelli nearly triangular; below middle ocellus with 1 faint stipe. Antennal sockets located in the middle of frons, approximately triangular. Clypeus smooth, median part of epistomal sulcus concave. Mandible length 0.47–0.49 times the height of the head (Fig. 8D–E). Fifth segment of maxillae palpus finger-like, third segment of labial palpus slightly swollen. Pronotum: rectangular, transverse, anterior margin slightly concave, posterior margin straight, anterior and posterior margins with setae; dorsally covered with short setae, both sides with linear patterns; median with one groove near anterior part. Tegmina with 2 oblique veins; mirror nearly trapezium with no vein inside; apical field narrow (Supp. file 1: Fig. S6G–H). Hind tibiae: 5 spurs on the outer side, 5 spurs on the inner side, and 6 apical spurs. Genitalia: epiphallus transverse. Medial process of epiphallus triangular, extending to lateral lobes of epiphallus; apex of process blunt and rounded with setae (Fig. 12J–K). Lateral lobe of epiphallus sheet-like, curved dorsad, gradually narrowing from the base to the apex, apex rather sharp with setae (Fig. 16J–K). Ectoparamere lobe-shaped, wider in the middle and tapering to a sharper apex, bending dorsad; inner margin at one-third of the distance from the apex without distinct process (Fig. 15J–K).

Female

Not examined.

Coloration

Body brown; eyes black, ocelli yellow; antennal sockets yellow; frons black; pronotum dark brown; femora brown; inner and outer sides of hind femora with dark brown oblique stripes or irregular spots.

Measurements (mm)

BL♂13.8–15.5; HL♂2.6–2.8; HW♂4.6–5.0; PL♂2.6–2.7; PW♂4.5–4.7; FWL♂7.9–8.3; FWW♂4.5–4.7; HFL♂10.4.

Distribution

China (Yunnan); Thailand.

Discussion

Ma (2019a, 2019b) described two subspecies of *Velarifictorus agitatus*: the nominotypical *V. agitatus agitatus* and *V. agitatus minutus*, distinguishing them based on body size and male genitalia. However, the original description did not specify concrete diagnostic characters. Our examination of specimens from Yunnan and Shaanxi, compared with the original literature, reveals no stable morphological differences. The purported variation in male genitalia is either unobservable or falls within the range of individual variation. For example, while Ma (2019a) reported that individuals of *V. agitatus minutus* are generally smaller, we also identified small-bodied individuals (BL = 10.9 mm) within Shaanxi populations, which overlap with the size range of *V. agitatus minutus*. Therefore, body size is also an unreliable character for subspecies separation. Additionally, we did not find differences between two subspecies in male genitalia. Based on the absence of consistent morphological distinctions, we synonymize *V. agitatus minutus* under the nominotypical subspecies.

Gorochov (1985) described the new subspecies *V. aspersus borealis* based on the deeply notched medial process of the male epiphallus. This subspecies was reported from temperate regions (e.g., Beijing, Shandong in China). In the present study, we examined specimens from temperate regions in China, such as Beijing, Shandong and Jiangsu. Except for an individual from Beijing (Fig. 11H), all male epiphalli lack a significantly notched medial process and are morphologically similar to those of southern populations (Fig. 11G, I). Thus, the notched medial process of the male epiphallus is an unreliable diagnostic feature. Therefore, until new diagnostic morphological characters are proposed, we suggest this subspecies invalid.

Oshiro (1990) described the new species *V. ryukyuensis* and differentiated it from *V. micado* as “differs in the number of longitudinal pale ragged stripes on the head (occiput), the shape and size of the transverse stripe above the antennae between the compound eyes, the shape and size of the tegmina, the number of hind tibial subapical spurs, and some other details. In addition, the ecological and behavioral style of this species differs from that of *V. micado*”. Our examination, however, indicates that these purported differences are either variable within *V. micado* or based on an inconsistent interpretation. For instance, the vertex of *V. micado* consistently bears six longitudinal pale stripes, matching the condition described by Oshiro (1990) for *V. ryukyuensis*. Moreover, the stripe between the lateral ocelli (S1) is variable in form (Fig. 5A–C) and is therefore unsuitable for species delimitation. The tegminal size also varies intraspecifically: the forewing length in our material measures 7.4–10.2 mm in males and 6.1–8.0 mm in females, overlapping with the ranges (8.5–11.4 mm in males, 5.1–10.5 mm in females) reported by Oshiro (1990). Regarding the hind tibial spurs, Oshiro (1990) reported 6 outer and 5 inner subapical spurs, plus 5 inner apical spurs for *V. ryukyuensis*. By contrast, our observations of *V. micado* and its close relatives show a consistent spur formula of 5 : 5 : 6 (outer : inner : apical). The discrepancy may stem from Oshiro misclassifying one apical spur as dorsal. Ecological and life-history traits are similarly uninformative. Wang *et al.* (2020) demonstrated that *V. micado* exhibits geographic variation in diapause expression and life cycle patterns, indicating that these differences are not diagnostically conclusive. Finally, Oshiro (1990) did not identify any differentiation in male genitalia between the two species. Based on the original line drawings, we also find no discernible differences in genital morphology. We therefore propose that *V. ryukyuensis* Oshiro, 1990 is a junior synonym of *V. micado* (Saussure, 1877).

Vasanth *et al.* (1975) did not conduct a morphological comparison between *V. khasiensis* and *V. ornatus*. Based on the descriptions available in the literature, no significant morphological differences exist between *V. khasiensis* and *V. ornatus*, except for the medial process of the epiphallus, which is narrower in *V. khasiensis* and wider in *V. ornatus*. Gorochov (1985) first recorded *V. khasiensis* in China and provided illustrations of the male genitalia. The genital morphology illustrated by Gorochov (1985) differs from that reported by Vasanth *et al.* (1975) in exhibiting a wider medial process, a feature

consistent with *V. ornatus*. Consequently, the specimen reported as *V. khasiensis* by Gorochov (1985) is proposed as a misidentification of *V. ornatus*.

Subsequently, another research team (Woo *et al.* 1992; Woo & Wang 1999) recorded this species from multiple provinces in China, including Fujian, Guangxi, Guizhou, Hainan, Henan, Hunan, Jiangxi, Yunnan, and Zhejiang. In their description of *V. khasiensis*, Woo & Wang (1999) provided a figure of the male genitalia modified from that of Gorochov (1985), but did not provide the genital morphology of the specimens they examined. If *V. khasiensis* were a common and widespread species, it would be unlikely that no individuals were collected during our extensive field work. Therefore, this team also misidentified *V. ornatus* as *V. khasiensis*. In summary, all records of *V. khasiensis* from China have been removed.

Through a comprehensive morphological review, this study revises the taxonomy of the genus *Velarifictorus* in China. The revisions include the confirmation of 18 species, incorporating new country records and synonymizing previously recognized taxa. The definitive species list is presented below: *V. (V.) aspersus* (Walker, 1869), *V. (V.) micado* (Saussure, 1877), *V. (V.) ornatus* (Shiraki, 1911), *V. (V.) arisanicus* (Shiraki, 1930), *V. (V.) flavifrons* Chopard, 1966, *V. (V.) brunneri* (Chopard, 1969), *V. (V.) beybienkoi* Gorochov, 1985, *V. (V.) triangularis* Ingrisch, 1998, *V. (V.) curvinervis* Xie, 2004, *V. (V.) bannaensis* Zhang, Liu & Shi, 2017, *V. (V.) dianxiensis* He, 2018, *V. (V.) agitatus* Ma, 2019, *V. (V.) landrevus* Ma, Qiao & Zhang, 2019, *V. (V.) stultus* Ma, 2019, *V. (V.) zhengi* Zheng & Ma, 2022, *V. (V.) yuanilandrevus* Wang & Ma, 2023, *V. (V.) yinhaisheng* Di & He, 2025, *V. (V.) liuxianwei* Di & He, 2025.

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Statements and declarations

All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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Supplementary file

Supp. file 1. Supplementary figures. <https://doi.org/10.5852/ejt.2026.1096.3327.14608>