

# A new species of *Saussurella* Bolivar (Orthoptera: Tetrigoidea: Batrachididae) from China with a key to species

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**Abstract:** One new species *Saussurella yunnanensis* Mao, Han & Li **sp. nov.** from Yunnan is described and illustrated with photographs. This new species is similar to *S. xizangensis* Zheng, Lin & Shi, 2013, but differs from the latter in: 1) frontal ridge with carinae nearly parallel; 2) horn-like process of pronotum moderately decurved distally with an obtusely rounded apex in profile; 3) abbreviated carinae between shoulders indistinct; 4) middle lobe of female subgenital plate equal to lateral lobes in length. A classification key to the species in the genus *Saussurella* is updated.

**Key words:** Caelifera; pygmy locust; taxonomy

## 中国股沟蚱属一新种及已知种检索表（直翅目：蚱总科：股沟蚱科）

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**摘要:** 记述股沟蚱属 1 新种: 云南股沟蚱 *Saussurella yunnanensis* Mao, Han & Li **sp. nov.**, 提供了照片图。新种与西藏股沟蚱 *S. xizangensis* Zheng, Lin & Shi, 2013 相似, 但与后者的不同之处在于: 1) 颜面隆起侧缘几乎平行; 2) 侧观, 前胸背板角状突末端适度向下弯曲, 端部钝圆形; 3) 肩部之间短纵隆线不清晰; 4) 雌性下生殖板中齿与侧齿等长。更新了股沟蚱属分种检索表。

**关键词:** 蝗亚目; 蚱; 分类

## Introduction

The genus *Saussurella* was erected by Bolivar in 1887 with *Saussurella cornuta* (De Haan, 1843) (= *Acrydium (Tetrix) cornutum* De Haan, 1843) as its type species. Brunner von Wattenwyl (1893) described *S. decurva*. Bolivar (1898) reported *S. javanica* and *S. sumatrensis*; Kirby (1910) transferred *Tetrix cucullifera* Walker, 1871 to *Saussurella*. Hancock (1912) reviewed the genus *Saussurella*, compiled a key containing 10 species, described 4 species: *S. borneensis*, *S. cornifrons*, *S. curticornu* and *S. indica*, and designated the

Accepted 27 December 2019. Published 25 March 2020. Published online 20 March 2020.

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replacement name of *S. brunneri* for the geographical population of the species *S. cornuta* occurring in Myanmar. Grant (1966) reviewed this genus, synonymized *S. brunneri* Hancock, 1921 and *S. cucullifera* (Walker, 1871) as *S. cornuta* (De Haan), as well as *S. cornifrons* Hancock, 1921 and *S. sumatrensis* Bolivar, 1898 as *S. decurva* Brunner von Wattenwyl, 1893. Podgornaya (1992) described *S. inelevata*. Otto (1997) transferred *Cassitettix longiptera* Yin, 1984 to *Saussurella*. Liang and Zheng (1998) described *S. acuticornis* Zheng. Zheng *et al.* (2013) described *S. xizangensis*, and synonymized *Saussurella inelevata* Podgornaya, 1992 as *Saussurella decurva* Brunner von Wattenwyl, 1893. Deng *et al.* (2017) reviewed this genus, described *S. brachycornis* Deng, Zheng & Lei, 2017, and provided a key to all known species of the genus. By now the genus *Saussurella* included 10 species: *S. acuticornis* Zheng, 1998 (China), *S. borneensis* Hancock, 1912 (Malaysia and China), *S. brachycornis* Deng, Zheng & Lei, 2017 (China), *S. cornuta* (De Haan, 1843) (Myanmar, China, India, Vietnam and Indonesia), *S. curticornu* Hancock, 1912 (India), *S. decurva* Brunner von Wattenwyl, 1893 (Myanmar, China, Malaysia, India, Vietnam, Thailand and Laos), *S. indica* Hancock, 1912 (India), *S. javanica* Bolivar, 1898 (Indonesia), *S. longiptera* (Yin, 1984) (China) and *S. xizangensis* Zheng, Lin & Shi, 2013 (China). In this study one new species, *Saussurella yunnanensis* Mao, Han & Li **sp. nov.** is proposed and an updated key to the species of *Saussurella* is presented.

## Material and methods

Specimens were photographed using a stereomicroscope (Keyence VHX-S550E) equipped with a digital microscopic system. The plates were post-corrected with Adobe Photoshop® CS2 software. Morphological terminology and measurement landmarks followed Zheng (2005) and Deng *et al.* (2007). The measurements are in millimeters (mm).

## Taxonomy

### Key to species of *Saussurella* Bolivar

1. Horn-like process of pronotum shorter, length less than that of tegmina, forward straight or slightly upcurved in profile; lateral margins of subgenital plate contracted apically in male ..... 2
- Horn-like process of pronotum longer, length 1.5 times more than that of tegmina, distinctly upwards oblique in profile; lateral margins of subgenital plate parallel or widened apically in male ..... 3
2. Body size smaller; horn-like process of pronotum forward straight in profile; middle lobe of female subgenital plate shorter than lateral lobes ..... *S. cornuta* (De Haan)
- Body size larger; horn-like process of pronotum slightly upwards oblique in profile; middle lobe of female subgenital plate longer than lateral lobes ..... *S. brachycornis* Deng, Zheng & Lei
3. Hind femora with genicular denticles large in size ..... 4
- Hind femora with genicular denticles normal ..... 6
4. Lateral ocelli placed on both sides of vertex, connect with upper margins of eyes; 3rd segment of posterior tarsus 1.5 times longer than 1st segment ..... *S. longiptera* (Yin)
- Lateral ocelli placed between anterior margins of eyes; 3rd segment of posterior tarsus as long as 1st segment ..... 5
5. Frontal ridge with carinae gradually narrowing downwards; horn-like process of pronotum extremely

- decurved distally with an acutely rounded apex in profile; a pair of abbreviated carinae between shoulders distinct; middle lobe of female subgenital plate longer than lateral lobes in length ..... *S. xizangensis* Zheng, Lin & Shi
- Frontal ridge with carinae nearly parallel; horn-like process of pronotum moderately decurved distally with an obtusely rounded apex in profile; a pair of abbreviated carinae between shoulders indistinct; middle lobe of female subgenital plate equal to lateral lobes in length ..... *S. yunnanensis* Mao, Han & Li **sp. nov.**
6. Horn-like process of pronotum extremely decurved distally and hook-like in profile, apex very acute in lateral and dorsal views ..... *S. acuticornis* Zheng
- Horn-like process of pronotum distally straight or finely decurved, apex rounded in lateral and dorsal views ..... 7
7. Middle lobe of female subgenital plate longer than lateral lobes in length ..... *S. indica* Hancock
- Middle lobe of female subgenital plate not longer than lateral lobes in length ..... 8
8. Horn-like process of pronotum with lower margin straight in profile; lateral margins of subgenital plate widened apically in male; middle lobe of female subgenital plate equal to lateral lobes in length ..... *S. borneensis* Hancock
- Horn-like process of pronotum with lower margin decurved forward in profile; lateral margins of subgenital plate parallel in male; middle lobe of female subgenital plate shorter than lateral lobes in length ..... 9
9. Horn-like process of pronotum with apex distinctly decurved in profile; length of horn-like process of pronotum about 3.1–3.6 mm ..... *S. decurva* Brunner von Wattenwyl
- Horn-like process of pronotum with apex slightly decurved in profile; length of horn-like process of pronotum less than 2.8 mm ..... 10
10. Body smaller, length of pronotum: ♂ 14.0–14.5 mm; length of horn-like process about 2.6–2.8 mm ..... *S. javanica* Bolivar
- Body larger, length of pronotum: ♂ 16.5–17 mm; length of horn-like process about 2.3 mm ..... *S. curticornu* Hancock

***Saussurella yunnanensis* Mao, Han & Li sp. nov.** (Figs. 1–7)

The body size slightly large, female moderately larger than male.

**Head.** Head very short, not exerted over the level of pronotal surface. Vertex arched in anterior view, 1.9 (♀) or 1.5 (♂) times as wide as one eye, anterior margin not protruding before the eyes; fastigium of vertex together with frontal costa roundly obtuse-angled. Frontal ridge concave area above lateral ocelli, finely arcuately protruding between two antennae, in frontal view longitudinal sulcus broad and deep, 1.3 (♀) or 1.1 (♂) times as wide as diameter of basal segment of antenna, lateral carinae nearly parallel between antennae. Antenna filiform, 19 segments, antennal sockets situated between lower margin of eyes, segment 9 longest, 6.6 (♀) or 8.4 (♂) times as long as wide. Eyes nearly globose in lateral view, at the same level of lateral margin of vertex. Lateral ocellus situated middle of inner margin of eye.

**Thorax.** Frontal cornu of pronotum protruding forward, prismatoidal, over the head in front, longer, length of horn-like process of pronotum about 4.2 (♀) or 2.5 (♂) mm, about 2.6 (♀) or 1.7 (♂) times as long as tegmina; in profile, horn-like process of pronotum strongly oblique upwards, lower margin undulated: basal 1/4 concave, median 1/2 convex and apical 1/4 concave, upper margin straight and distally reclinate, apex slightly hooked, obtusely rounded; in dorsal view, horn-like process of pronotum cuneate, sides straight, apex rounded. Pronotum with midkeel obvious, upper margin straight in profile; lateral keels of prozona nearly parallel, humeral angle obtusely rounded, abbreviated carinae between shoulders

indistinct, dorsum covered with a few and larger (♀) or a lot and smaller (♂) granules, triangularly depressed-fossulate on each side behind shoulders; posterior process of pronotum narrow, long wedge-shaped, surpassing apex of hind femur and reaching middle of hind tibia, distally slightly turned up, apex finely concave. Lateral lobes of pronotum turned downwards, posterior angles nearly right angles, posterior margin of each lateral lobe with two concavities. Tegmina long oval, apex round, visible part of tegmina as wide as middle femora in both sexes. Hind wings long, surpassing apex of posterior process of pronotum about 1.6 (♀) or 1.5 (♂) mm, apex reaching 3/5 of posterior tibia. Fore femora elongate, upper and lower sides conspicuously sulcate. Mid femora elongate, upper margins terminating in a long genicular spine (♀) or a short genicular tooth (♂). Hind femora stubby, 3.1 times as long as wide in both sexes, dorsal and ventral sides with mid keels dentate, genicular teeth very large, triangular and sharp (♀) or small and obtuse (♂); hind tibia with 6–8 external and 6 internal spines on dorsal sides; hind tarsi with first segment finely shorter than third one, first pulvillus as long as second, third pulvillus longer than first or second, apices of all pulvilli obtuse.

**Abdomen.** Subgenital plate of female longer than its width, posterior margin with three lobes, middle lobe equal to lateral lobes in length. Subgenital plate of male oblong, apex truncate, lateral margins nearly parallel. Ovipositor narrow and long, length of upper valvulae 4.7 times its width, outer sides of upper and lower valvulae with slender saw-like teeth.

**Coloration.** Body brown. Antenna yellowish brown. Fore process black brown. Tegmina black brown and edge yellowish brown. Fore and mid femora black brown. Hind femora black brown with 1–2 yellowish brown transverse spots.

**Measurements.** Length of body (from vertex to knee of hind femur): ♂ 12.2 mm, ♀ 12.6 mm; length of pronotum (including horn-like process): ♂ 15.5 mm, ♀ 17.5 mm; length of horn-like process of pronotum: ♂ 2.5 mm, ♀ 4.2 mm; length of tegmen: 1.5 (♂) or 1.6 (♀) mm; length of hind femur: ♂ 6.8 mm, ♀ 6.9 mm.

**Holotype.** ♀, **China**, Yunnan, Yingjiang, 24°40'N, 97°35'E, alt. 674 m, 02-X-2018, leg. Benyong MAO. **Paratype.** 1♂, data same as holotype. Type specimens are deposited in the Biological Science Museum, Dali University (BMDU), Yunnan Province, China.

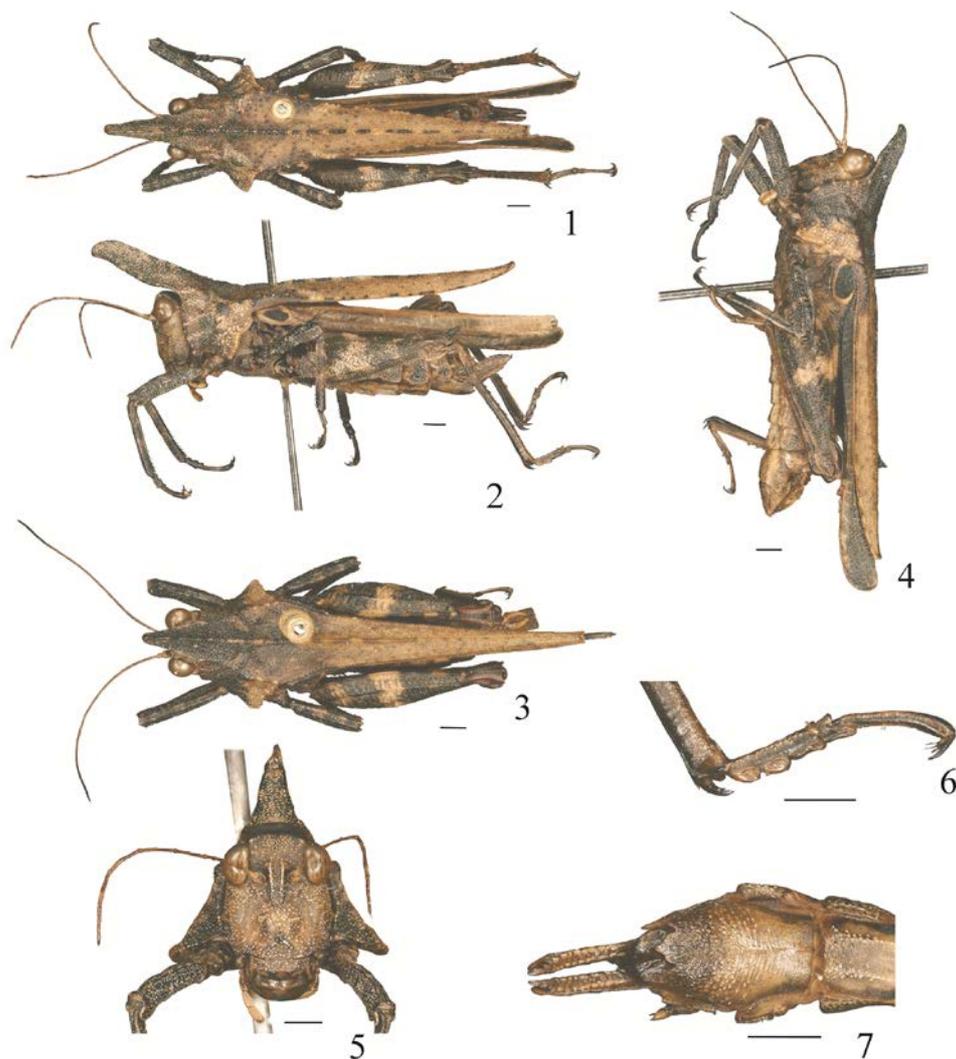
**Distribution:** China (Yunnan).

**Etymology.** The specific epithet indicates the type locality Yunnan Province.

**Diagnosis.** This new species is similar to *S. xizangensis* Zheng, Lin & Shi, 2013, but differs from the latter in: 1) frontal ridge with carinae nearly parallel; 2) horn-like process of pronotum moderately decurved distally with an obtusely rounded apex in profile; 3) a pair of abbreviated carinae between the shoulders indistinct; 4) middle lobe of female subgenital plate equal to lateral lobes in length.

## Acknowledgements

We are very grateful to Dr. Weian Deng (School of Chemistry and Bioengineering, Hechi University, China) for providing us with his valuable separate. This project was supported by the National Natural Science Foundation of China (31760628, 31960110) and the Yunnan Provincial Education Department's Science Research Foundation Projects (2015Z155).



Figures 1–7. *Saussurella yunnanensis* Mao, Han & Li **sp. nov.** 1, 2, 5–7. ♀; 3, 4. ♂. 1, 3. Habitus of adults, dorsal views; 2, 4. Habitus of adults, lateral views; 5. Head of female, frontal view; 6. Posterior tarsus of female, lateral view. 7. Subgenital plate of female, ventral view. Scale bars = 1 mm.

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