

A new species in the genus *Tetradinodula* Zha (Orthoptera: Tetrigidae) from Yunnan, China

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Abstract: One new species in the genus *Tetradinodula* Zha, 2017 is described and illustrated with photographs. *Tetradinodula strictivertex* Mao & Li **sp. nov.** is similar to *T. reticulata* Mao & Li, 2020, but differs from the latter in: 1) vertex 1.7 times as wide as one eye (2.9 times in *T. reticulata*); 2) vertex nearly at the same level of upper margin of eyes (vertex markedly surpassing the upper margin of eyes in *T. reticulata*); 3) antenna with middle segments about 5.2 times as long as wide (3.1 times in *T. reticulata*); 4) lateral ocellus situated slightly below the middle of inner margin of eye (lateral ocellus placed slightly above lower margin of eyes in *T. reticulata*); and 5) external lateral carina of pronotum nearly straight (external lateral carina strongly curved in *T. reticulata*).

Key words: pygmy locust; Cladonotinae; taxonomy; key

中国云南四瘤蚱属一新种（直翅目：蚱科）

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摘要: 记述四瘤蚱属 1 新种: 狭顶四瘤蚱 *Tetradinodula strictivertex* Mao & Li **sp. nov.**, 提供了特征照片图。新种与网纹四瘤蚱 *T. reticulata* Mao & Li, 2020 相似, 但以下面的特征区别于后者: 头顶宽为一眼宽的 1.7 倍 (后者为 2.9 倍); 头顶与复眼上缘在同一水平面 (后者头顶明显超过复眼上缘); 触角中段部分长约为宽的 5.2 倍 (后者为 3.1 倍); 侧单眼位于复眼内缘中部稍下处 (后者侧单眼在复眼下缘稍上方处); 前胸背板外侧隆线近平直 (后者外侧隆线在前部强烈弯曲)。

关键词: 蚱; 枝背蚱亚科; 分类; 检索表

Introduction

The genus *Tetradinodula* was erected by Zha in 2017 with *T. bambusae* Zha, 2017 as its type. Two species were later added by Li *et al.* (2020). Therefore, prior to this study, only 3

Accepted 20 December 2022. Published online 27 February 2023. Published 25 March 2023.

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species were known in *Tetradinodula*, and all of them were distributed in China (Guizhou and Yunnan).

In this paper, one new species in this genus from Yunnan, China is described. A key to species of this genus is also provided.

Material and methods

Specimens were examined using a stereo microscope (Olympus SZX16) and photographed using a digital microscope (Keyence VHX-S550E). Morphological terminology and measurement landmarks follow Tumbrinck (2014). Abbreviations of the pronotal projections follow Storozhenko & Pushkar (2017) and Skejo & Bertner (2017): PM — promedial; MM1 — first metamedial; MM2 — second metamedial; PML1 — first promediolateral; PML2 — second promediolateral; MML1 — first metamediolateral; MML2 — second metamediolateral; PL1 — first prolateral; PL2 — second prolateral. Measurements are given in millimeters (mm). Taxonomy follows Cigliano *et al.* 2022 (= Orthoptera Species File). Type specimens are deposited in the Biological Science Museum, Dali University (BMDU), Yunnan, China.

Taxonomy

Key to species of *Tetradinodula* Zha from China

1. Anterior margin of vertex nearly straight in dorsal view; lateral carinae of vertex before eyes surpassing the level of anterior margin of eyes in lateral view 2
- Anterior margin of vertex undulated and serrate in dorsal view; lateral carinae of vertex before eyes reaching the level of anterior margin of eyes in lateral view 3
2. Vertex 2.9 times as wide as one eye; vertex markedly surpassing the upper margin of eyes; lateral ocellus placed slightly above lower margin of eyes; external lateral carina of pronotum strongly curved *T. reticula* Mao & Li
- Vertex 1.7 times as wide as one eye; vertex nearly at the same level of upper margin of eyes; lateral ocellus situated middle of inner margin of eye; external lateral carina of pronotum nearly straight *T. strictivertex* Mao & Li **sp. nov.**
3. Posterior area of pronotal disc with humps and wrinkled ridge; apex of pronotal process acutely rounded; outer margin of fore and mid tibiae without tooth, upper margin of mid femur with two small teeth *T. gaoligongshanensis* Li & Mao
- Posterior area of pronotal disc with humps; apex of pronotal process broadly rounded; outer margin of fore and mid tibiae with two small teeth each, upper margin of mid femur with two large teeth *T. bambusae* Zha

Tetradinodula strictivertex Mao & Li **sp. nov.** (Figs 1–13)

Female. Body stout and size small, surface coarse and extremely uneven, covered with numerous granules and conspicuous humps (Fig. 1).

Head. Vertex wide, 1.7 times as wide as one eye, nearly at the same level that is almost reaching upper margin of eyes; medial carina visible in anterior half but absent in posterior half; anterior margin nearly straight in dorsal view; lateral carinae projected forwards and surpassing level of anterior margin of eyes, anterior part folded upwards and nearly at the

same level of eyes; paired fossulae deep, behind fossulae vertex on both sides of medial carina slightly elevated. In lateral view face vertical, fastigium of vertex together with frontal costa rightly rounded and markedly exerted, frontal costa markedly visible before eyes, fascial carinae between antennal grooves smooth, strongly arched forwards (Figs 1, 2); in frontal view frontal costa diverges nearly in middle of inner margin of eyes, width of scutellum between antennae 1.1 times width of first segment of antennae. Antenna filiform, 15-segmented, inserted below lower margins of eyes, middle segments about 5.2 times as long as wide. Eyes globose, slightly over level of anterior margin of pronotum, lateral ocellus situated slightly below the middle of inner margin of eye (Fig. 5).

Pronotum. Anterior margin of pronotum truncated, extralateral carinae short with swollen base; pronotum between posterior sulcus and humeral angles distinctly elevated in the centre, upper margin of pronotum slightly undulated behind humeral angles (Figs 2, 4). Median carina thick, invisible before anterior sulcus, with swollen base if elevated, before humeral angles thick lamellate and strongly elevated; in lateral view upper margin behind anterior sulcus gradually elevated, highest at the level of posterior sulcus, distinctly concave above the humeral angles and then weakly undulated backward. Prozonal carinae conspicuous and parallel, with swollen base, in lateral view arcuate. Disc of pronotum robustly coarse, lateral area between sulci and humeral angles slightly concave, PM medium-sized, MM1 and MM2 large, PML1 hardly recognisable, PML2 medium-sized, MML1 large, MML2 hardly recognisable, PL1 and PL2 medium-sized (Figs 1, 3). Between posterior sulcus and humeral angles, pronotum in the centre extremely elevated and with paired large humps (MML1) on both side of median carina, together with the concave median carina, four distinct large humps formed. In posterior area pronotal disc covered with conspicuously wrinkled ridge with swollen base and rare small humps; humeral angles roundedly curved; pronotal process slightly wide, reaching antegenicular denticle, apex narrowly rounded in dorsal view; external lateral carina nearly straight, reaching sub-end of pronotal process; posterior angle of lateral lobe of pronotum extending obliquely and outwards, margin smooth, apex truncated; posterior margins of lateral lobes of pronotum with one concavity. Tegmen and wing invisible (Figs 2, 4).

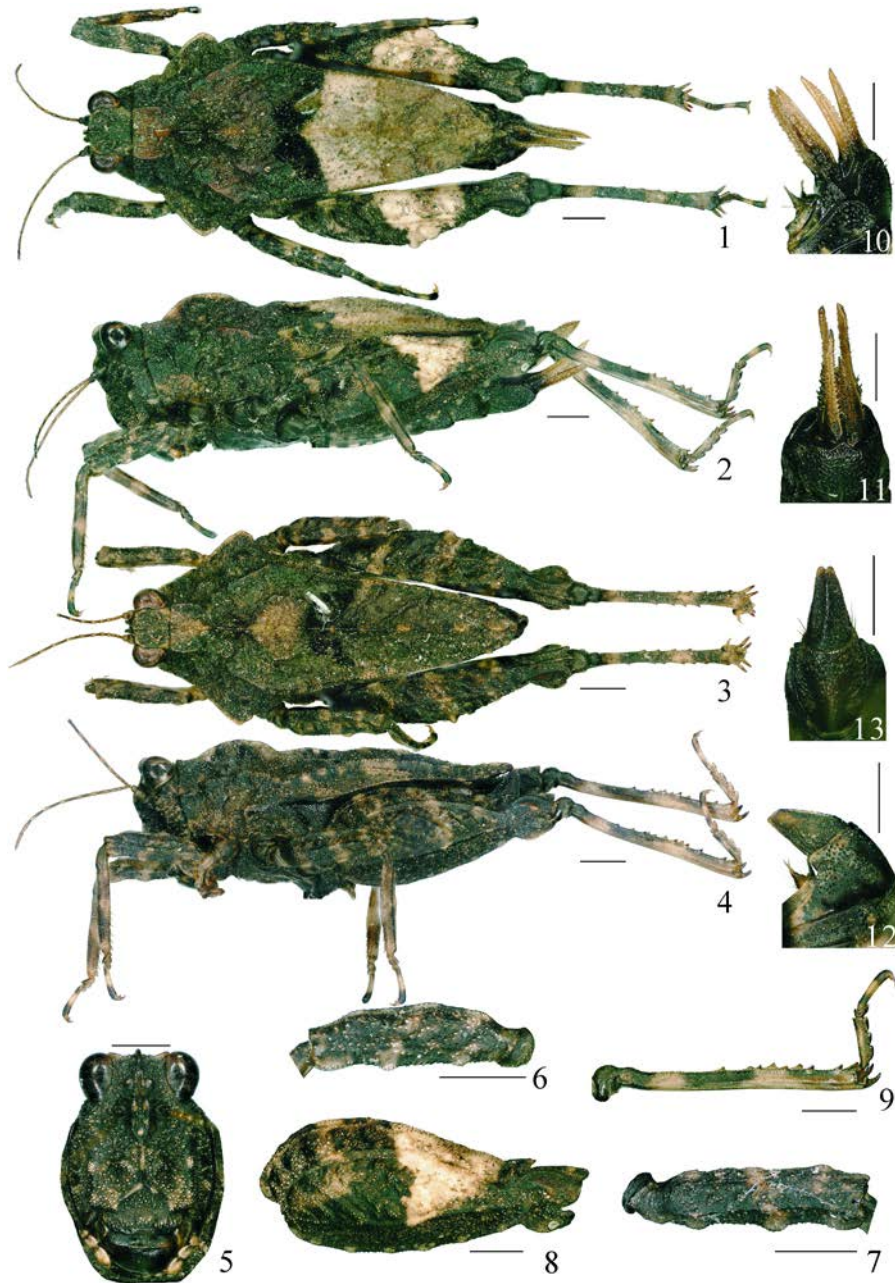
Legs. Margins of all femora slightly serrate except base of upper margin of hind femur; upper margin of fore femur a little undulated while lower margin with two large teeth; upper margin of middle femur undulated and three small teeth while lower margin with two large teeth (Figs 6, 7); Hind femur stout, about 2.5 times as long as wide, outer side with four to six nodules; lower margin with three to five small teeth; antegenicular denticles triangular, high, apex distinctly acute angled, genicular denticle extending backwards and apex obtuse (Fig. 8). Inner margins of hind tibia serrate, terminal part slightly wider than basal part, outer/inner side with four to seven spines; first segment of hind tarsus about 1.1 times as long as second plus third, first pulvillus medium, second and third pulvilli slightly large and apex obtuse (Fig. 9).

Abdomen. Upper valva about 4.3 times as long as wide, upper margin arcuate, outer margins of upper and lower valves with saw-like teeth. Length of subgenital plate length nearly equal to width, posterior margin truncated and middle broadly triangularly projected and folded inwards (Figs 10, 11).

Body brown or dark brown. All tibiae brownish-yellow with two to three dark brown rings each.

Male. Slightly smaller than female. Vertex 1.5 times as wide as one eye. Longitudinal furrow of frontal ridge between antennae 1.3 times as wide as first segment of antennae.

Antenna with middle segments 5.3 times as long as wide. Subgenital plate short cone-shaped, apex bifurcate (Figs 12, 13). Other characters same as female.



Figures 1–13. *Tetradinodula strictivertex* Mao & Li **sp. nov.** 1, 2, 5–11: ♀; 3, 4, 12, 13: ♂. 1, 2. Body, dorsal and lateral views; 3, 4. Body, dorsal and lateral views; 5. Head, frontal view; 6–8. Left fore, middle and hind femora, lateral views; 9. Left hind tibia, lateral view; 10. Ovipositor, lateral view; 11. Subgenital plate, ventral view; 12, 13. Subgenital plate, lateral and ventral views. Scale bars = 1 mm.

Measurements. Length of body ♀ 10.2–10.9 mm, ♂ 8.0–8.4 mm; length of pronotum ♀ 7.9–8.4 mm, ♂ 7.2–7.3 mm; length of hind femur ♀ 5.5–5.7 mm, ♂ 4.8–5.2 mm; length of antenna ♀ 4.0–4.5 mm, ♂ 4.0–4.3 mm.

Holotype. ♀, **China**, Yunnan, Jingdong, 24°69'N, 100°52'E, alt. 2391 m, 06-VIII-2022, leg. Chengmei FAN. **Paratypes.** 3♀2♂, leg. Yazhen CHEN, Zhuangzhuang DU & Zhilong YIN, other data same as holotype. Type specimens are deposited in the BMDU.

Etymology. The specific epithet is derived from the Latin terms “*strictus*” and “*vertex*”, meaning the vertex is narrow and straight.

Diagnosis. This species is similar to *T. reticulata* Mao & Li, 2020, but differs in: vertex 1.7 times as wide as one eye (2.9 times in *T. reticulata*); vertex nearly at the same level of upper margin of eyes (vertex markedly surpassing the upper margin of eyes in *T. reticulata*); antenna with middle segments about 5.2 times as long as wide (3.1 times in *T. reticulata*); lateral ocellus situated slightly below the middle of inner margin of eye (lateral ocellus placed slightly above lower margin of eyes in *T. reticulata*); external lateral carina of pronotum nearly straight (external lateral carina strongly curved in *T. reticulata*).

Acknowledgements

We are thankful to Chengmei FAN and Zhilong YIN for collecting the specimens. We also thank anonymous reviewers for their modifications and suggestions. This project was funded by the National Natural Science Foundation of China (31760628, 31960110) and the Science and Technology Planning Project of Yunnan Province (202204AM130004).

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