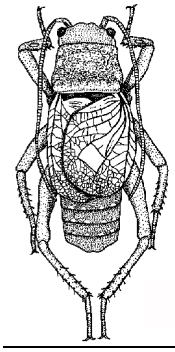

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TWO NEW SPECIES OF GRYLLACRIDINAE (ORTHOPTERA: GRYLLACRIDIDAE) FROM YUNNAN, CHINA

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Summary. Two new species of Gryllacrididae, *Dialarnaca quadrateprocera* **sp. n.** and *Gryllacris menglaensis* **sp. n.**, are described and illustrated from Yunnan, China. The type specimens of the new species are deposited in the Museum of Hebei University. The genus *Gryllacris* Serville, 1831 is recorded from China for the first time. Also, a key to species of the genus *Dialarnaca* Gorochov, 2005 is provided.

Key words: Orthoptera, Gryllacrididae, taxonomy, new species, key, China.

Ц. Бянь, Ю.-Д. Жу, Ф.-М. Ши. Два новых вида Gryllacridinae (Orthoptera: Gryllacrididae) из провинции Юннань, Китай // Дальневосточный энтомолог. 2017. N 338. С. 1-9.

Резюме. Из провинции Юннань в Китае описаны два новых для науки вида: *Dialarnaca quadrateprocera* **sp. n.** и *Gryllacris menglaensis* **sp. n.** Типы новых видов хранятся в музее университета Хэбей. Род *Gryllacris* Serville, 1831 впервые приводится для фауны Китая. Дана определительная таблица видов рода *Dialarnaca* Gorochov, 2005.

INTRODUCTION

China has a rich and diverse raspy cricket fauna, with over 106 species assigned to 23 genera (Cigliano *et al.*, 2017). Of these genera, 26 species under 14 genera are endemic to Yunnan, China. In the present study two new species of the genera *Dialarnaca* Gorochov, 2005 and *Gryllacris* Serville, 1831 respectively are found in Yunnan, China and described below.

MATERIAL AND METHODS

The present study is principally based on the specimens deposited in the collection of the Museum of Hebei University. The examination and measurements of the specimens were carried out with a Leica M205A stereomicroscope. Multifocused, montage images were produced by the first author using Lieca DFC 450 digital imaging system. Finally, the background was cleaned up, and the color balance, contrast and sharpness were adjusted using Adobe Photoshop CS6.

The measuring method follows previous convention Bian *et al.* (2013). All the measurements are given in millimeters to the one decimal place.

TAXONOMY

Family Gryllacrididae Blanchard, 1845

Subfamily Gryllacridinae Blanchard, 1845

Genus *Dialarnaca* Gorochov, 2005

Dialarnaca Gorochov, 2005: 821; Shi *et al.*, 2016: 2.

Type species: *Dialarnaca roseola* Gorochov, 2005, by original designation.

REMARKS. The monotypic genus *Dialarnaca* was proposed by Gorochov (2005) for a type species from Vietnam. Later two species was described from the Hainan and Yunnan provinces of China (Shi *et al.*, 2016). Herein one new species is described from Yunnan. A key to all known species of *Dialarnaca* is provided below.

Key to the species of *Dialarnaca*

1 Processes of 10th abdominal tergite nearly rectangular ……..……..... ..... *D. quadrateprocera* **sp. n.**

– Processes of 10th abdominal tergite triangular ……..…… 2

2 Apical area of male cerci curly, styli shorter (0.23–0.24 mm), about 3.92–4.43 times shorter than the length of male subgenital plate along the midline ....……..... *D. longicerca* Shi et Bian, 2016

– Male cerci straight, styli longer, about 2.33–2.47 times shorter than the length of male subgenital plate along the midline 3

3 Posterior area of male subgenital plate slightly projecting, posterior margin shallowly concave in the middle ..... *D. roseola* Gorochov, 2005

– Posterior area of male subgenital plate trapezoidal projecting, posterior margin nearly straight ..... *D. zhoui* Shi et Bian, 2016

Figs. 1–12. *Dialarnaca quadrateprocera* sp. n., male (1–5) and female (6–12). 1, 6 – head, frontal view; 2–3, 7–8 – head and pronotum (2, 7 – dorsal view; 3, 8 – lateral view); 4–5, 9 – apex of abdomen (4, 9 – lateral view; 5 – apical view); 10–11 – subgenital plate, ventral view; 12. apex of ovipositor, lateral view.

***Dialarnaca quadrateprocera* Bian, Zhu et Shi, sp. n.**
Figs 1–18

TYPE MATERIAL. Holotype – male, **China**: Yunnan, Jinghong, Mengyang, 8.IX 2016, coll. Xun Bian. Paratypes: **China**: Yunnan, 1 ♀, the same data as in holotype; 1 ♂, 1 ♀, Jinghong, Mengyang, 7.X 2016, coll. Xun Bian; 1 ♂, Pu'er, Laiyanghe, 26.VIII 2009, coll. Ming Qiu and Ruilian Li.

DESCRIPTION. MALE. Fastigium verticis obtusely rounded, about 1.2 times wider than scape (Figs 1, 13). Eyes oval; ocelli nearly distinct, medium ocellus nearly equal to lateral ocelli (Figs 1, 13). Apical segments of maxillary palpi almost equal to subapical ones, apices slightly inflated.

Anterior margin of pronotum slightly protruding in the middle, posterior margin almost straight (Figs 2, 14); lateral lobes longer than high, rectangular (Figs 3, 15).

Fore coxae with 1 small spine on external margin. Fore and middle femora unarmed on ventral surface, tibiae with 4 pairs of spines and 1 pair of apical spines on ventral surface; middle tibiae with 1 internal apical spine on dorsal surface. Hind femora armed ventrally with 13 internal and 6–7 external spines; tibiae with 4 internal and 5–6 external spines on dorsal surface, apices with 1 pair of dorsal spines and 2 pairs of ventral spines, subapices with 1 pair of spines on ventral surface.

Tegmina obviously surpassing apex of abdomen, extending to apices of hind tibiae; hind wings slightly longer than tegmina.

Middle of posterior margin of 9th abdominal tergite protruding backward, apex curved ventrally, with numerous teeth (Fig. 4). Middle of posterior margin of 10th abdominal tergite with 1 pair of rectangular processes, curved inward, apices distinctly sclerotized (Figs 5, 16). Cerci slender and long, rolled, conical (Fig. 17). Basal area of subgenital plate broad, narrowing, posterior margin obtusely rounded (Figs 17, 18). Styli nearly cylindrical, located on both sides of subapical area of subgenital plate (Fig. 17).

FEMALE. Body is similar to male. Cerci slender and long, pointing dorsoinwards (Fig. 9). Centre of posterior margin 6th abdominal sternum with 1 small process, directing upward, its apex obtusely rounded (Fig. 11). The 7th abdominal sternum semimembranous, posterior margin almost straight (Fig. 11). Subgenital plate trapezoidal, basal area broad, narrowing to apex, lateral margin arc, posterior margin relatively straight, middle area slightly concave (Figs 10, 11). Ovipositor long, curved upward, dorsal and ventral margin smooth, apices slightly acute (Fig. 12).

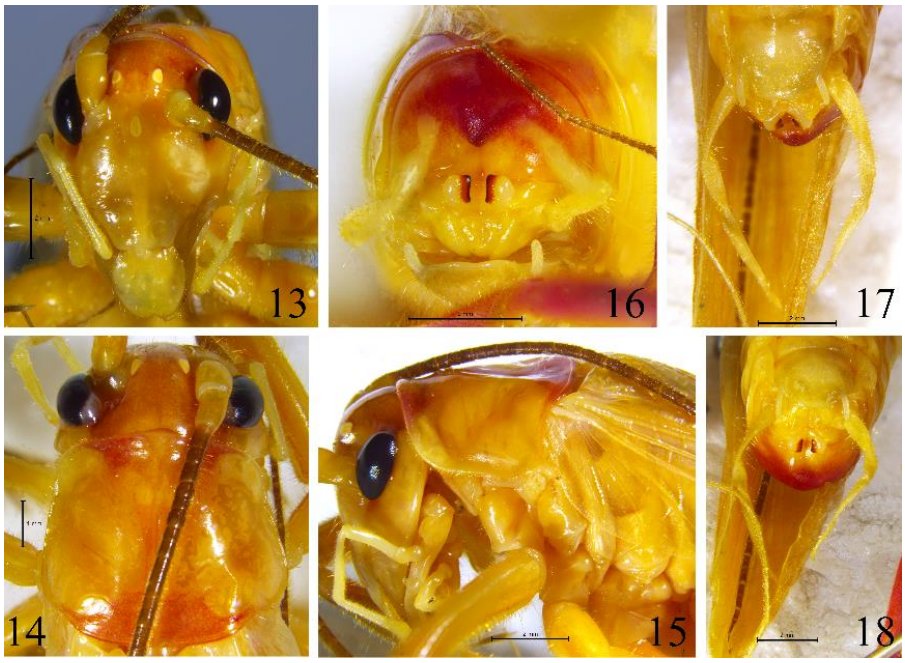
COLORATION. Body yellowish brown. Eyes black, ocelli light yellow. Fastigium verticis with 1 black spot. Occiput with 1 black spot. Antennal flagellum blackish brown. Disc of pronotum with red spots. Spines of fore and middle tibiae blackish brown, their apices yellow, apical spines yellowish brown. Spines of hind femora and tibiae black, apical spines yellowish brown. Fore and middle tibiae, and hind femora and tibiae light red. Apices of processes of 10th abdominal tergite black.

MEASUREMENTS (mm). Length of body: ♂ 15.5–18.9, ♀ 19.0–19.7; pronotum: ♂ 3.7–4.0, ♀ 5.1–5.2; tegmina: ♂ 21.9–22.3, ♀ 23.0–23.8; hind femora: ♂ 11.8–12.4, ♀ 14.6–15.5; ovipositor: 17.8–18.2.

DISTRIBUTION. China (Yunnan).

DISCUSSION. This species is similar to *Dialarnaca longicerca* Shi et Bian, 2016, but differs from the latter in: body yellowish brown, disc of pronotum with red spots, centre of posterior margin of male 10th abdominal tergite with a pair of short rectangular processes.

ETYMOLOGY. The new name derives from male 10th abdominal tergite with rectangular processes.



Figs. 13–18. *Dialarnaca quadrateprocera* sp. n., male. 13 – head, frontal view; 14–15 – head and pronotum (14 – dorsal view; 15 – lateral view); 16–18 – apex of abdomen (16 – apical view; 17 – ventral view; 18 – ventro-apical view).

Genus *Gryllacris* Audinet-Serville, 1831

Gryllacris Serville, 1831: 138; Rehn, 1905: 827; Kirby, 1906: 139; Karny, 1937: 161; ICZN, 1943: 18; ICZN, 1954: 685; Otte, 2000: 16; Gorochov, 2007: 1256; Gorochov *et al.*, 2015: 230.

Type species: *Gryllacris macullicollis* Serville, 1831 [synonymized with *Gryllacris signifera* (Stoll, 1813) by Kirby (1906)], by subsequent designation (Rehn, 1905), see also ICZN (1943, 1954).

REMARKS. The genus *Gryllacris* Audinet-Serville, 1831 is one of the most species-rich taxon of raspy crickets and contains 69 described species (Cigliano *et*

al., 2017). Its geographical range is the Oriental region and the Australian region. The genus is diagnosed by male ninth abdominal tergite distinctly protruding backwards with unpaired ventral lobes and ventral surface of female subgenital plate with triangular prominence at base and always with process behind the prominence. Over the last decade, only Gorochov (2007) and Gorochov *et al.* (2015) recognized the 11 species (subspecies) including 7 new ones. Up to now, the species of this genus has not been recorded from China. Herein one new species is described from Yunnan.

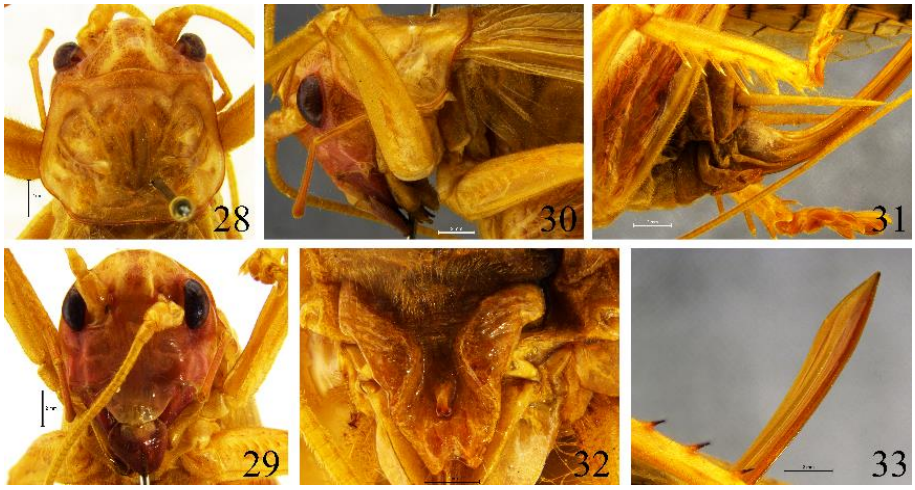
Figs. 19–27. *Gryllacris menglaensis* sp. n., male. 19 – head, frontal view; 20–21 – head and pronotum (20 – dorsal view; 21 – lateral view); 21–25 – apex of abdomen (21 – apical view; 22 – apico-dorsal view; 23, 25 – apico-dorsal view; 24 – lateral view); 26–27 – subgenital plate (26 – ventral view; 27 – ventro-apical view).

***Gryllacris menglaensis* Bian, Zhu et Shi, sp. n.**
Figs 19–33

TYPE MATERIAL. Holotype: male – **China**: Yunnan, Xishuangbanna, Mengla, 29.V 2015, coll. Ping Wang. Paratypes: 2 ♀, the same data as in holotype.

DESCRIPTION. MALE. Body large. Frons smooth, without obviously punctation. Fastigium verticis broad, about 2 times wider than antennal scape (Fig. 19). Antennal scape as long as the total length of pedicel and first segment of flagellum. Eyes protruding outward; ocelli distinct, medium ocellus large, lateral ocelli occupying on both sides of fastigium verticis (Fig. 19). Apical segments of maxillary palpi slight longer than subapical ones, apices obliquely truncated, slightly inflate.

Centre of anterior margin of pronotum protruding, posterior margin relatively straight; lateral lobes longer than high, subtrapezoid, anterior and posterior margins slightly oblique, ventral surface straight.



Figs. 28–33. *Gryllacris menglaensis* sp. n., female. 28 – head, frontal view; 29 –30 – head and pronotum (29 – dorsal view, 30 – lateral view); 31 – apex of abdomen, lateral view; 32 – subgenital plate, ventral view; 33 – apex of ovipositor, lateral view.

Fore coxae with 1 small spine. Fore and middle femora unarmed on ventral surface, tibiae armed ventrally with 4 pairs of movable long spines and 1 pair of apical spines, the apical spines small; middle tibiae with 1 internal apical spine on dorsal surface. Hind femora with 8 spines on ventral surface, apical spines obviously longer than basal spines; tibiae with 6 pairs of spines on dorsal surface, 1 pair of dorsal apical spines and 2 pairs of ventral apical spines, interno-apical spines distinctly longer than externo-apical ones, subapices with 1 pair of spines on ventral surface.

Tegmina surpassing apex of abdomen, reaching to subapical area of hind tibiae; hind wings longer than tegmina.

The 9th abdominal tergite narrow, centre of posterior margin with 4 small tubercular processes, directing backward (Figs 23–25); ventral surface of processes nearly triangular, extending to downward, (Fig. 22). Cerci slender, pointing posterior margin, slight curved inward. Subgenital plate transverse and broad, basal margin relatively straight, posterior margin arced, centre with 1 small triangular concavity (Figs 26, 27); styli slender, longer than subgenital plate, apices obtusely rounded.

FEMALE. Body larger than male. Cerci conical. The 7th abdominal sternum transverse and broad, ventral surface with 1 transverse carina, semimembranous between the apices and basal area of subgenital plate (Fig. 32). Basal area of subgenital plate broad, narrowing, basal margin arced concave, posterior margin angular concave, the lateral lobes nearly triangular (Fig. 32); ventral surface distinctly raised, forming 1 pair of longitudinal carinae, between the longitudinal carinae subrectangular concave and with 1 small process, the apical half of process curved unpward, apex obtusely rounded with slightly concave (Fig. 32). Ovipositor obviously curved upward, dorsal and ventral margins smooth, apices of dorsal valvulae slightly expended, obliquely truncated (Fig. 33).

COLORATION. Body yellowish brown, unicolor. Eyes brown, ocelli light yellow; base of labrum light red, apex blackish brown. Apices of claws, apices of spines of hind femora and spines of tibiae black. Cells of apical half of tegmina with light black spots. Abdominal tergite with brown stripes.

MEASUREMENTS (mm). Length of body: ♂ 29.2, ♀ 28.6–34.3; pronotum: ♂ 7.4, ♀ 8.5–8.6; tegmina: ♂ 36.6, ♀ 35.5–37.1; hind femora: ♂ 20.3, ♀ 20.8–22.2; ovipositor: 27.7–28.5.

DISTRIBUTION. China (Yunnan).

DISCUSSION. This species differs from other species of the genus by: centre of posterior margin of 9th abdominal tergite with 4 small tuberculate processes, ventral surface with 1 triangular leaf-shaped process, its posterior margin slightly concave; ventral surface of female subgenital plate distinctly raised, middle area subrectangular concave with 1 small process, its apical half curved dorsad, its apex obtusely rounded.

ETYMOLOGY. The new name is derived from Mengla, the type locality of the new species.

ACKNOWLEDGEMENTS

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REFERENCES

Bian, X., Shi, F.M. & Guo, L.Y. 2013. Review of the genus *Furcilarnaca* Gorochov, 2004 (Orthoptera: Gryllacrididae, Gryllacridinae) from China. *Far Eastern Entomologist*, 268: 1–8.

Cigliano, M.M., Braun, H., Eades, D.C. & Otte, D. 2017. *Orthoptera Species File. Version 5.0/5.0*. http://Orthoptera.SpeciesFile.org. (Accessed 25 May 2017)

Gorochov, A. V. 2005. Contribution to the Fauna and Systematics of the Stenopelmatoidea (Orthoptera) of Indochina and Some Other Territories. VI. *Entomologicheskoe Obozrenie*, 84 (4): 828–847. [In Russian; English translation: *Entomological Review*, 85(8): 918–933]

Gorochov, A.V. 2007. Contributions to the Fauna and Systematics of Stenopelmatoidea (Orthoptera) of Indochina and Some Other Territories. VII. *Entomologicheskoe Obozrenie*, 87(9): 1256–1276. [In Russian; English translation: *Entomological Review*, 86(4): 845–862]

Gorochov, A.V., Dawwrueng, P. & Artchawakom, T. 2015. Study of Gryllacridinae (Orthoptera: Stenopelmatidae) from Thailand and adjacent countries: the genera *Diaphanogryllacris* and *Gryllacris*. *Zoosystematica Rossica*, 24 (2): 219–235.

ICZN. 1943. Orthoptera: Twenty-two generic names placed on the official list of generic names. *Bulletin of Zoological Nomenclature*): 17–19.

ICZN. 1954. Direction 7. Determination of the gender to be attributed to certain generic names placed on the "Official list of generic names in Zoology" by the rulings given in "Opinions" 134 to 181. *Opinions and declarations rendered by the International Commission on Zoological Nomenclature*, 2(56): 685–696.

Karny, H.H. 1937. Orthoptera, Fam. Gryllacrididae, Subfamiliae Omnes. *Genera Insectorum, Fascicule*, 206: 1–317.

Kirby, W.F. 1906. *A Synonymic Catalogue of Orthoptera*. British Museum(Natural History), London, 2. 1–562.

Otte, D. 2000. *Orthoptera Species File 8: Gryllacrididae, Stenopelmatidae, Cooloolidae, Schizodactylidae, Anastostomatidae and Rhaphidophoridae*. The Orthoptersts' Society at the Academy of Natural Sciences, Philadelphia: 1–97.

Rehn, J.A.G. 1905. Notes on the Orthoptera of Costa Rica, with descriptions of new species. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 57: 790–843.

Serville, J.G.A. 1831. Revue méthodique des insectes de l'ordre des Orthoptères. *Annales des Sciences Naturelles*, 22 (86): 28–65, 134–167, 262–292.

Shi, F.M., Bian, X. & Guo, L.Y. 2016. First record of the genus *Dialarnaca* Gorochov, 2005 from China, with description of two new species (Orthoptera, Gryllacrididae, Gryllacridinae). *Zookeys*, 558: 1–8. https://doi.org/10.3897/zookeys.558.6165