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To the knowledge of the genus *Tachycines* Adelung, 1902 (Orthoptera: Rhaphidophoridae: Aemodogryllinae)

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Abstract. *Tachycines* (*Gymnaeta*) *tiunovi* sp. n. is described from the Yunnan Province of China. The new species is most similar to *T. (G.) dianxicus* Qin, Liu et Li, 2019, *T. (G.) fallax* (Zhang et Liu, 2009) and *T. (G.) chenhui* (Rampini et Di Russo, 2008) but differs from them in the smaller body size and the shape of male genitalia. The distribution map of *T. (Tachycines) asynamorus* in the Caucasus is provided. This synanthropic species is recorded for the first time from the southern Russia (Krasnodar Region: Sochi), Abkhazia and Georgia.

Key words: Aemodogryllini, *Tachycines*, *Gymnaeta*, new species, distribution, China, Russia, Abkhazia, Georgia.

К познанию рода *Tachycines* Adelung, 1902 (Orthoptera: Rhaphidophoridae: Aemodogryllinae)

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Резюме. Из китайской провинции Юньнань описан новый вид *Tachycines* (*Gymnaeta*) *tiunovi* sp. n. Новый вид близок к *T. (G.) dianxicus* Qin, Liu et Li, 2019, *T. (G.) fallax* (Zhang et Liu, 2009) и *T. (G.) chenhui* (Rampini et Di Russo, 2008), но отличается от них меньшими размерами тела и формой гениталий самца. Приведена карта распространения *T. (Tachycines) asynamorus* на Кавказе. Этот синантропный вид впервые отмечен на юге России (Краснодарский край: Сочи), в Абхазии и Грузии.

Ключевые слова: Aemodogryllini, *Tachycines*, *Gymnaeta*, новый вид, распространение, Китай, Россия, Абхазия, Грузия.

Introduction

The genus *Tachycines* Adelung, 1902 belongs to the tribe Aemodogryllini (Rhaphidophoridae: Aemodogryllinae). At the beginning of the last century, two genera, *Tachycines* Adelung, 1902 (with *T. asynamorus* Adelung, 1902 from Russia) and *Gymnaeta* Adelung, 1902 (with *G. beresowskii* Adelung, 1902 and *G. gansuicus* Adelung, 1902 from Gansu Province of China) has been described [Adelung, 1902]. Later, *Gymnaeta* was treated as a subgenus of the genus *Tachycines* [Karny, 1934]. This point of view was accepted in the revision of the subfamily Aemodogryllinae [Storozhenko, 1990]. Gorochov and Storozhenko [1992] incorporated *Tachycines* and *Gymnaeta* into *Diestrammena* Brunner von Wattenwyl, 1888 as subgenera. Later *Tachycines* was considered as a distinct genus consists of two subgenera, nominotypical and *Gymnaeta* [Qin et al., 2018]. In total, 104 species in the genus *Tachycines* are known from China, Korea, Japan, Myanmar, Vietnam and the Philippines [Cigliano et al., 2024] while one species was introduced to Europe and North America. A new species of the subgenus *Gymnaeta* from China is described and illustrated below and the data on distribution of *Tachycines* (*T.*) *asynamorus* in the Caucasus are summarized.

Material and methods

The holotype of the new species is deposited in the collection of the Zoological Institute of the Russian Academy of Sciences (ZIN, St Petersburg, Russia). This specimen was collected in 2006. It was stored and examined by us in 70% ethanol; after that the specimen was pinned and dried.

The morphological terminology and measurements follow those of Storozhenko [1990]. Classification and composition of Rhaphidophoridae follow to the database Orthoptera Species File [Cigliano et al., 2024]. Photographs were taken with an Olympus SZX16 stereomicroscope and an Olympus DP74 digital camera, and then stacked using Helicon Focus software. The final illustrations were post-processed for contrast and brightness using Adobe® Photoshop® software.

Genus *Tachycines* Adelung, 1902

Subgenus *Tachycines* Adelung, 1902

Tachycines (*Tachycines*) *asynamorus* Adelung, 1902

Material. Abkhazia: 1♂, 1♀ (ZIN), 12 km from Sukhumi, Gulripsh, 42°92'N / 41°10'E, 11.06.1982 (A.V. Gorochov).

Notes. This species was described from greenhouse in Russia (St Petersburg). At present time it is recorded

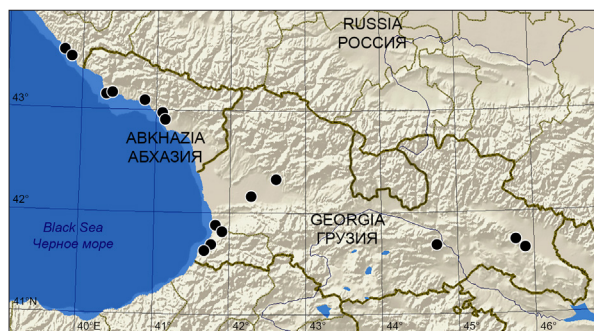


Fig. 1. Distribution of *Tachycines (T.) asynamorus* in the Caucasus.
Рис. 1. Распространение *Tachycines (T.) asynamorus* на Кавказе.

from houses, botanical gardens, and greenhouses in Europe and North America but in nature known from China, Korea and Japan [Storozhenko et al., 2015]. In Russia, *T. asynamorus* was found in St Petersburg, Moscow, Kirov, Penza, and Kazan [Karmazina et al., 2020]. This species undoubtedly present in Abkhazia, as shown by specimens examined. Moreover, we examined the images of *T. asynamorus* from iNaturalist [Tachycines..., 2024]. Images of one female from Sochi and one male from Khosta (vicinity of Sochi) undoubtedly belong to this species. According to iNaturalist *T. asynamorus* is also distributed in Abkhazia (Pitsunda, Novyy Afon, Sukhum) and Georgia (Tbilisi, Kvareli, Kardanakhi, Gurjaani, Samtredia, Tskaltubo, Kobuleti, Sakhvalvasho, Zeda-Kondidi, and Batumi) where this species inhabits houses, apartments and wine cellars. Thus, *T. asynamorus* is widely distributed in the Caucasus and formally is recorded from Krasnodar Region (Russia), Abkhazia

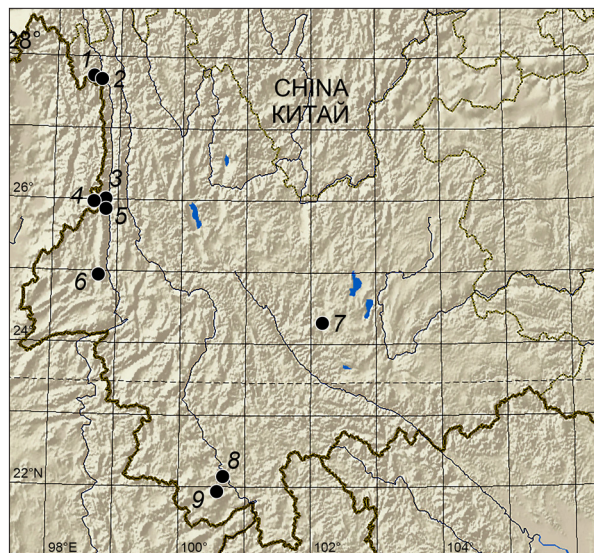


Fig. 2. Distribution of *Tachycines (Gymnaeta)* species in the Yunnan Province of China.

Рис. 2. Распространение видов *Tachycines (Gymnaeta)* в китайской провинции Юньнань.

1 – *T. (G.) vicinus* Qin, Liu et Li, 2019; 2 – *T. (G.) dianxicus*; 3 – *T. (G.) parvus* Qin, Liu et Li, 2019; 4 – *T. (G.) lushuicus* Qin, Liu et Li, 2019; 5 – *T. (G.) pallidus* Qin, Liu et Li, 2019; 6 – *T. (G.) fallax*; 7 – *T. (G.) tiunovi* sp. n.; 8 – *T. (G.) roundatus* Zhang et Liu, 2009; 9 – *T. (G.) bifurcatus* Gorochov, 2010.

and Georgia for the first time (Fig. 1), but all images of “*asynamorus*” in iNaturalist from Turkey belong to *Troglophilus* sp. (Rhaphidophoridae: Troglophilinae).

Subgenus *Gymnaeta* Adelung, 1902

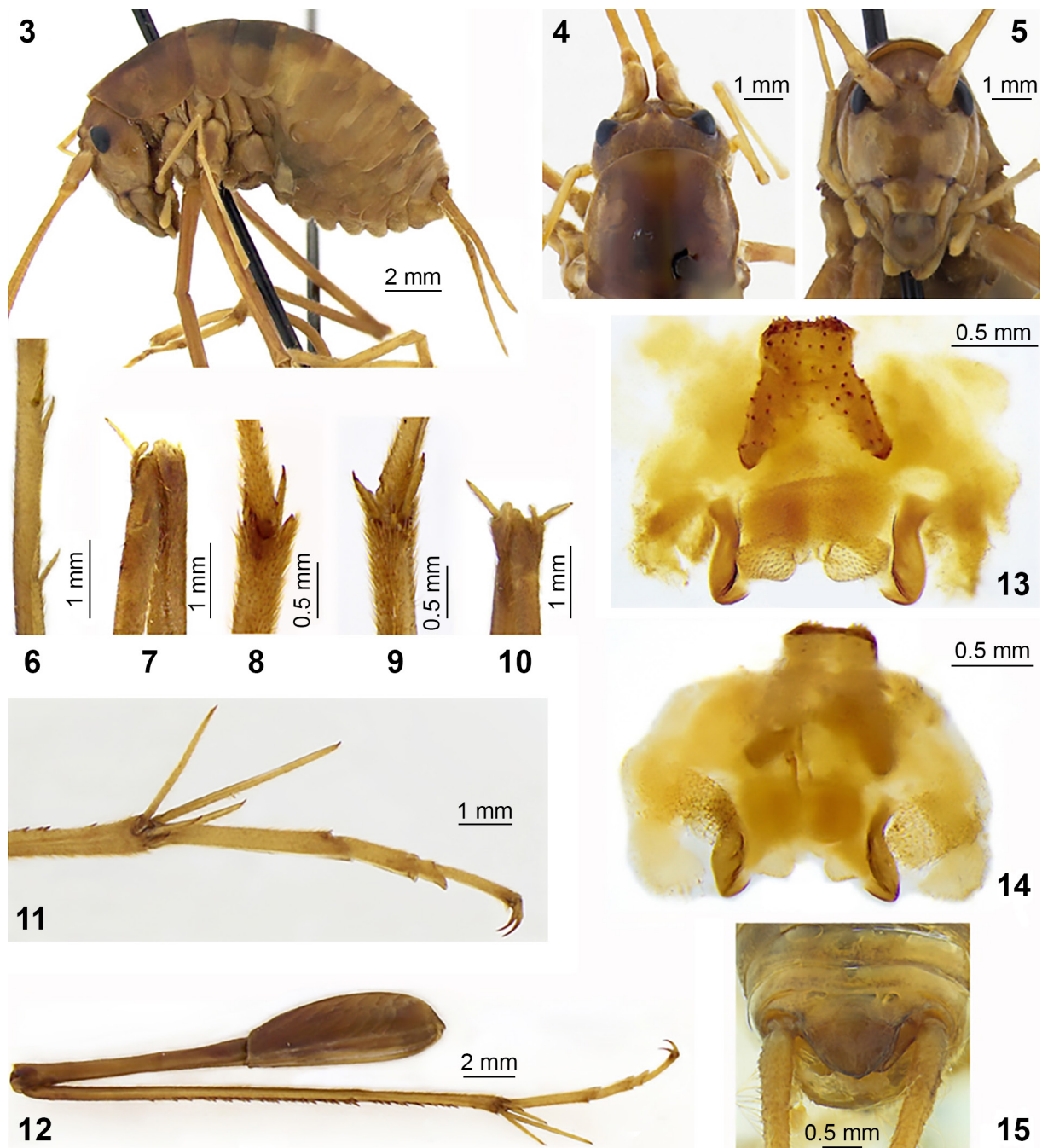
Notes. The type species of this subgenus is *T. beresowskii* by subsequent designation [Karny, 1934]. The subgenus includes 82 species, the majority of them are endemic to South China and only few species are known from Vietnam, Myanmar and the Philippines [Cigliano et al., 2024]. It is the most diverse taxon of the subfamily Aemodogryllinae of which many species were described recently [Qin et al., 2019; Feng et al., 2020; Zhu et al., 2020; Zhou, Yang, 2020, 2022; Li et al., 2021; Zhu, Shi, 2021].

Tachycines (Gymnaeta) tiunovi Lapteva et Storozhenko, sp. n. (Figs 2–15)

Material. Holotype, ♂ (ZIN): China, Yunnan, Huyan Cave at Shuanghechang Village, 24°29'N / 102°22'E, 17.06.2006 (M.P. Tiunov).

Diagnosis. The new species is most similar to *T. (G.) dianxicus* Qin, Liu et Li, 2019 from Yunnan but differs in the body size, colouration, and male genitalia (in *T. (G.) dianxicus*, body length 8.5–10 mm, hind femur length 18 mm; body light brown; face without brown vertical stripe, and lateral sides of dorso-median lobe of epiphallus with narrow sclerotized plates). The new species is also similar to *T. (G.) chenhui* (Rampini et Di Russo, 2008) from Guizhou and *T. (G.) fallax* (Zhang et Liu, 2009) from Yunnan but easy recognizable from them by the shape of male genitalia (in both compared species, the lateral sclerites of the dorso-median lobes with hook-like distal edge; epiphallus with deeply notched posterior side in *T. chenhui* or narrow, with straight posterior side in *T. fallax*). From the majority of other congeners the new species differs in the long supra internal spur of hind tibiae which almost exceeding the apex of hind metatarsus.

Description. Male (holotype). Body rather small for this genus. Head with vertex divided into short conical tubercles (Fig. 4). Eyes large, but smaller than scapus (Fig. 3). Pronotum relatively short. Legs elongate and slender; fore femur about 2.4 times longer than pronotum, ventrally unarmed, internal genicular lobe with small spine, external genicular lobe with 1 elongate movable spine (Fig. 7); ventral side of fore tibia with two outer spines and one inner spine (Fig. 6); apex of fore tibia with 1 dorsal spur (Fig. 8) and 3 ventral spurs of which mid spur smallest (Fig. 9). Mid femur with elongate movable spines on internal and external genicular lobes (Fig. 10), ventrally unarmed; mid tibiae beneath with 2 external and 1 internal spine. Hind femur without spines ventrally; hind tibiae above at each side with 39–44 spines respectively, arranged in groups (Fig. 12). Supra internal spur of hind tibiae surpassing ventral apex of hind metatarsus; hind metatarsus elongated, keeled ventrally (Fig. 11). Epiproct broadly triangle (Fig. 15). Genitalia (Figs 13, 14): epiphallus (unpaired dorsal sclerite) broad, with almost straight posterior side and deeply excised anterior side; dorso-median lobe membranous, apically divided into 2 broad lobes covered by short bristles, lateral sclerites of dorso-median lobe relatively broad, surpass apex of dorso-median lobe, distal edge of sclerites blunt; dorso-lateral lobes membranous, as long as dorso-median lobe; ventro-lateral lobes curved and with numerous bristles at apex.



Figs 3–15. *Tachycines (Gymnaeta) tiunovi* sp. n., male, holotype.

3 – body, lateral view; 4 – head and pronotum, dorsal view; 5 – head, frontal view; 6 – fore tibia, ventro-lateral view; 7 – apex of fore femur, ventral view; 8–9 – apex of fore tibia: 8 – dorsal view, 9 – ventral view; 10 – apex of mid femur, ventral view; 11 – apex of hind tibia and tarsus, lateral view; 12 – hind leg, lateral view; 13–14 – genitalia: 13 – dorsal view, 14 – ventral view; 15 – apex of abdomen, dorsal view.

Рис. 3–15. *Tachycines (Gymnaeta) tiunovi* sp. n., самец, голотип.

3 – тело, вид сбоку; 4 – голова и переднеспинка, вид сверху; 5 – голова, вид спереди; 6 – передняя голень, вид сбоку и снизу; 7 – вершина переднего бедра, вид снизу; 8–9 – вершина передней голени: 8 – вид сверху, 9 – вид снизу; 10 – вершина среднего бедра, вид снизу; 11 – вершина задней голени и лапка, вид сбоку; 12 – задняя нога, вид сбоку; 13–14 – гениталии: 13 – вид сверху, 14 – вид снизу; 15 – вершина брюшка, вид сверху.

Colouration. Body brown. Head from above dark brown; face in frontal view with brown vertical stripe from vertex to labrum; genae and lateral sides of clypeus light brown; eyes black; antennae light brown (Fig. 5). Pronotum, meso- and metanotum dark brown. Fore and mid legs light brown; hind femur blackish brown; hind tibia and tarsi brown. Abdominal tergites and sternites light brown; epiproct blackish brown. Cerci light brown.

Length (in mm). Body 8.1; pronotum 2.5; fore femur 6; mid femur 5.5; hind femur 10.5; fore tibia 6; mid tibia 6; hind tibia 12.1. Female unknown.

Distribution. Known from the type locality only. Previously eight species of *Gymnaeta* were known from western regions of Yunnan but the new species was collected in central part of the province (Fig. 2).

Etymology. This species is dedicated to Prof. Mikhail Petrovich Tiunov (Vladivostok, Russia) who collected the type specimen in China.

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References

- Adelung N. 1902. Beitrag zur Kenntnis der paläarktischen Stenopelmatiden (Orthoptera, Locustodea). *Annuaire du Musée Zoologique de l'Académie Impériale des Sciences de St.-Petersbourg*. 7: 55–75.
- Cigliano M.M., Braun H., Eades D.C., Otte D. 2024. Orthoptera Species File. Taxonomic database of the world's grasshoppers, locusts, katydids, crickets, and related insects. Available at: <https://orthoptera.speciesfile.org/> (accessed 30 May 2024).
- Feng X., Huang S., Luo C. 2020. Three new cave species of the subgenus *Tachycines* (*Gymnaeta*) (Orthoptera: Rhaphidophoridae: Aemodogryllinae) from northern Guizhou, China. *Zootaxa*. 4820(3): 563–571. DOI: 10.11646/zootaxa.4820.3.9
- Gorochov A.V., Storozhenko S.Yu. 1992. On the fauna of the subfamily Aemodogryllinae (Orthoptera, Rhaphidophoridae) in Vietnam. In: Trudy Zoologicheskogo instituta Rossiyskoy akademii nauk. Tom 245. Novosti sistematiki i faunistiki nasekomykh V'etnama. Chast' 3 [Proceedings of the Zoological Institute of the Russian Academy of Sciences. Vol. 245. News of systematics and faunistics of insects of Vietnam. Part 3]. St Petersburg: Zoological Institute of the Russian Academy of Sciences: 17–34 (in Russian).
- Karmazina I.O., Usmanov B.M., Shulaev N.N. 2020. Data on the first finds of the greenhouse katydid *Tachycines* (*Diestrammena*) *asynamorus* Adelung, 1902 (Orthoptera, Rhaphidophoridae) in the Republic of Tatarstan. In: Trudy Kazanskogo otdeleniya Russkogo entomologicheskogo obshchestva. Vyp. 6 [Proceedings of the Kazan Branch of the Russian Entomological Society. Iss. 6]. Kazan: Olitekh: 9–13 (in Russian).
- Karny H.H. 1934. Zur Kenntnis der ostasiatischen Rhaphidophorinen (Orth. Salt. Gryllacrididae). *Konowia, Zeitschrift für Systematische Insektenkunde*. 13(3): 216–218.
- Li B., Feng X., Luo C. 2021. Four new species of the subgenus *Tachycines* (*Gymnaeta*) (Rhaphidophoridae: Aemodogryllinae: Aemodogryllini) from caves in northern Guizhou, China. *Zootaxa*. 4991(1): 150–160. DOI: 10.11646/zootaxa.4991.1.7
- Qin Y., Liu X., Li K. 2019. Review of the subgenus *Tachycines* (*Gymnaeta*) Adelung, 1902 (Orthoptera, Rhaphidophoridae, Aemodogryllinae, Aemodogryllini). *Zootaxa*. 4560(2): 273–310. DOI: 10.11646/zootaxa.4560.2.3
- Qin Y., Wang H., Liu X., Li K. 2018. Divided the genus *Tachycines* Adelung (Orthoptera, Rhaphidophoridae: Aemodogryllinae: Aemodogryllini) from China. *Zootaxa*. 4374(4): 51–475. DOI: 10.11646/zootaxa.4374.4.1
- Storozhenko S.Yu. 1990. Review of the subfamily Aemodogryllinae (Orthoptera, Rhaphidophoridae). *Entomologicheskoe obozrenie*. 69(4): 835–849 (in Russian).
- Storozhenko S.Yu., Kim T.W., Jeon M.J. 2015. Monograph of Korean Orthoptera. Incheon: Doohyuh Publishing Co. 377 p.
- Tachycines asynamorus*. 2024. *iNaturalist*. Available at: <https://www.inaturalist.org/taxa/767707> (accessed 30 May 2024).
- Zhou X., Yang W. 2020. A new species of *Tachycines* Adelung, 1902 (Orthoptera, Rhaphidophoridae, Aemodogryllinae, Aemodogryllini) from karst caves in Guizhou, China. *ZooKeys*. 937: 21–29. DOI: 10.3897/zookeys.937.49173
- Zhou X., Yang W. 2022. Ten new species of genus *Tachycines* (Orthoptera, Rhaphidophoridae, Aemodogryllinae) from karst caves in Guizhou, China. *ZooKeys*. 1109: 115–140. DOI: 10.3897/zookeys.1109.73937
- Zhu Q., Chen H., Shi F. 2020. Remarks on the genus *Tachycines* Adelung, 1902 (Orthoptera: Rhaphidophoridae: Aemodogryllinae) with description of eight new species from caves in southern China. *Zootaxa*. 4809(1): 71–94. DOI: 10.11646/zootaxa.4809.1.4
- Zhu Q.-D., Shi F.-M. 2021. Description of four new species of the subgenus *Tachycines* (*Gymnaeta*) Adelung, 1902 (Orthoptera: Rhaphidophoridae) from caves in China and additional notes on some previously known species. *European Journal of Taxonomy*. 764(1): 1–17. DOI: 10.5852/ejt.2021.764.1465

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