

РОССИЙСКАЯ АКАДЕМИЯ НАУК  
Южный научный центр

RUSSIAN ACADEMY OF SCIENCES  
Southern Scientific Centre



# Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 15. Вып. 2

Vol. 15. No. 2



Ростов-на-Дону  
2019

**The first record of the invasive cricket species  
*Velarifictorus micado* (Saussure, 1877)  
(Orthoptera: Gryllidae: Gryllinae) for Transcaucasia (Georgia)**

**Первое указание вселенца *Velarifictorus micado* (Saussure, 1877)  
(Orthoptera: Gryllidae: Gryllinae) для Закавказья (Грузия)**

© J. Mulder<sup>1</sup>, A.V. Gorochov<sup>2</sup>  
© Дж. Малдер<sup>1</sup>, А.В. Горохов<sup>2</sup>

<sup>1</sup>Natural History Museum Rotterdam, Westzeedijk, 345, Rotterdam 3015AA Netherlands. E-mail: contact@ecologischnadiviesbureau.nl

<sup>2</sup>Zoological Institute of the Russian Academy of Sciences, Universitetskaya Emb., 1, Saint Petersburg 199034 Russia. E-mail: orthopt@zin.ru

<sup>1</sup>Музей естественной истории в Роттердаме, Вестзедейк, 345, Роттердам 3015AA Нидерланды

<sup>2</sup>Зоологический институт Российской академии наук, Университетская наб., 1, Санкт-Петербург 199034 Россия

**Key words:** Orthoptera, Gryllidae, Transcaucasia, Colchian lowland, invasive species.

**Ключевые слова:** Orthoptera, Gryllidae, Закавказье, Колхидская низменность, инвазивный вид.

**Abstract.** A few crickets specimens collected in Georgia turned out to belong to the genus *Velarifictorus* Randell, 1964 and to the species *micado*, which is widely distributed in East Asia. The species is common in urban surroundings in Japan, China and Korean Peninsula, known in the South of Russian Far East and in some countries of South-East Asia. *Velarifictorus micado* is known for its expansion potential; it has invaded a large part of the United States of America after introduction in 1959. The species has not been observed in Europe so far, but now it is recorded for the first time in Georgia. Invasion of adjacent Turkish and Russian lowland territory is to be expected. Consequences of the introduction are debated.

**Резюме.** Несколько экземпляров сверчков, собранных в Грузии, оказались принадлежащими к роду *Velarifictorus* Randell, 1964 и виду *V. micado*, который широко распространен в Восточной Азии. Этот вид обычен вокруг урбанистических ландшафтов в Японии, Китае и на Корейском полуострове, отмечен на российском Дальнем Востоке и в некоторых странах Юго-Восточной Азии. Вид отличается высоким инвазионным потенциалом. Отмечалась инвазия этого вида на территорию Соединенных Штатов Америки. Этот вид не был известен в Европе, впервые указывается для Грузии. Ожидается инвазия этого вида на прилегающие территории Турции и России. Обсуждаются последствия этой интродукции.

During a trip through Georgia in July-August 2018 covering a large part of the country, the first author observed some small crickets in the Samagrela part of the Samagrela – Zemo Svaneti Region. Opposed to the mountainous part of the region (Zemo Svaneti), Samagrela, also known as Mingrelia, is a lowland area with the subtropical climate. It is part of the Colchian lowland.

Among the numerous tiny *Pteronemobius heydenii* (Fischer, 1853) specimens, some bigger dark crickets were seen. In the field, their whitish palps were remarkable, but identification of the species at first sight was problematic. Four specimens of this species were collected; they are deposited in the first author's collection. However, species determination with the help of keys for Transcaucasia and Europe turned out to be impossible. The male was subsequently studied by the second author.

Measurements were taken and the specimen's morphology was described qualitatively and quantitatively. Male genitalia were extracted and photographed.

*Velarifictorus (Velarifictorus) micado* (Saussure, 1877)  
(Figs 1–5)

**Material.** 1♂ (JM 20180043), 3 nymphs (JM 20180027–29), Georgia, Mingrelia, environs of Matskhovriskari Railway Station near the Abasha River, 42°13'45"N / 42°10'01"E, 20 m above sea level, on the border of a marshy patch and dry landscape, 4.08.2018 (coll. J. Mulder).

**Brief description of the male.** Body (Figs 1, 2) somewhat smaller than that of *Acheta domesticus* (Linnaeus, 1758) but slightly larger than in *Modicogryllus frontalis* (Fieber, 1844), *M. truncatus* (Tarbinsky, 1940) and *Eumodocogryllus bordigalensis* (Latreille, 1804) usual around Black Sea Coast of Georgia. Head rather large, almost semiglobular but with moderately elongate mouthparts and more or less straight clypeal suture; rostrum between antennal cavities approximately as wide as scape; epicranium shiny black with light thin transverse stripe between lateral ocelli and three pairs of lightish spots (between lateral ocellus and eye, behind eye on posterior part of vertex, and on gena under eye); mouthparts brown to light brown with almost dark brown areas on clypeus and labrum as well as with yellowish maxillae and labium having whitish palps; antennae dark brown with light areas on scapes. Pronotum transverse, with almost parallel lateral sides and clearly oblique ventral edges of lateral lobes; pronotal coloration dull blackish with light ventral part of lateral lobes.

Tegmina almost reaching abdominal apex, harp with two oblique veins (longest of them somewhat S-shaped), with



Figs 1–5. *Velarifictorus (Velarifictorus) micado*, male.

1–2 – imago: 1 – posterodorsal view, 2 – lateral view; 3–5 – genitalia: 3 – from above, 4 – from below, 5 – from the left side.

Рис. 1–5. *Velarifictorus (Velarifictorus) micado*, самец.

1–2 – имаго: 1 – постеродорсально, 2 – латерально; 3–5 – гениталии: 3 – сверху, 4 – снизу, 5 – с левой стороны.

moderately large and almost rectangular mirror almost as long as wide and having one dividing vein in distal half and with apical area slightly shorter than mirror (f. brachyptera); hind wings shortened, invisible in rest position (in f. macroptera, known from eastern Asia, tegminal apical area somewhat longer than mirror, and hind wings significantly protruding beyond tegminal apices); tegminal coloration shiny dark with ventral parts of lateral fields cream. Legs typical of Gryllinae; outer tympanum oval and rather large, almost 3.5 times as long as small and almost round inner tympanum; hind tibia with five pairs of dorsal spines (except for apical spurs); hind basitarsus with 5–7 dorsal denticles on each side and a pair of much larger apical spurs; all legs light but with dark marble distal parts of femora, dark to darkish spots on tibiae and on middle parts of femora (however, outer side of hind femur with numerous dark oblique stripes on middle and subbasal parts). Supra-anal plate barely elongate, moderately narrowing backwards, with widely truncate apex; subgenital plate almost roundly angular at apex, approximately 1.5 times as long as anal plate; cerci distinctly longer than tegmina; genitalia as in Figs 3–5.

Measurements of male (in mm). Body length from rostral apex to apex of subgenital plate 17; length of pronotum 3.1; width of pronotum 4.9; length of tegmen 8.6; length of hind femur 10.4.

All morphological characters are congruent to *Velarifictorus micado* f. brachyptera.

## Discussion

This Japanese burrowing cricket has its original distribution in East Asia and cannot be considered a native inhabitant of Georgia. It is common in urban surroundings in Japan, China and Korea, known in the South of Russian Far East and in some countries of South-East Asia. It is known for its expansion potential. The enormous expansion after introduction in the United States has been documented well [Walker, 1977; Bowles, 2018]. Introduction in Georgia

probably has been unintentional. Eggs in root balls or substrate of especially ornamental plants may be a possible vector. The nearby railway station could be an explanation of its occurrence there.

The subtropical climatological circumstances of this region seem to be perfect and, although flying capacity normally is absent, a distribution expansion is to be expected to have happened already or will happen in the near future. This will undoubtedly include adherent Turkish and Russian territory as well. The circumstances in the mountainous regions of Georgia are probably unsuitable for the species. Rarely the species can be macropterous, which enables flight and enhances the dispersal capacity. The expansion pattern in all probability will follow the way other Eastern Asian alien insect species have exhibited in the region, e.g. the brown marmorated stink bug *Halyomorpha halys* (Stål, 1855) [Gapon, 2016; Murvanidze et al., 2018] or the Japanese planthopper *Ricania japonica* Melichar, 1898. In the United States it has spread until a latitude of 43°N.

We do not expect this species to have a severe socio-economic impact on agriculture nor to be directly detrimental to biodiversity. The species can reach extremely high densities though [Hall et al., <http://dpr.ncparks.gov/orth/index.php>], which theoretically could impact other crickets by predation and competition for space and food. Management strategies like eradication measures are not feasible.

## Acknowledgements

We would like to thank the anonymous referees for the valuable comments on the manuscript.

## References

- Bowles D.E. 2018. Introduced Japanese burrowing cricket (Orthoptera: Gryllidae: *Velarifictorus (Velarifictorus) micado*) range continues to expand in North America. *Journal of Orthoptera Research*. 27(2): 177–181. DOI: 10.3897/jor.27.29067
- Gapon D.A. 2016. First records of the brown marmorated stink bug *Halyomorpha halys* (Stål, 1855) (Heteroptera: Pentatomidae) in Russia, Abkhazia, and Georgia. *Entomological Review*. 96(8): 1086–1088. DOI: 10.1134/S001387381608011X
- Hall S., Corey E., Howard T. Orthoptera of North Carolina. Available at: <http://dpr.ncparks.gov/orth/index.php> (accessed 21 March 2019).
- Murvanidze M., Krawczyk G., Inasaridze N., Dekanoidze L., Samsonadze N., Macharashvili M., Khutsishvili S., Shengelaia S. 2018. Preliminary data on the biology of brown marmorated stink bug *Halyomorpha halys* (Hemiptera, Pentatomidae) in Georgia. *Turkish Journal of Zoology*. 42: 617–624. DOI: 10.3906/zoo-1802-34
- Walker T.J. 1977. Japanese burrowing cricket widely established in southeastern United States. *Florida Entomologist*. 60(4): 308–309.

Received / Поступила: 11.07.2019

Accepted / Принята: 4.09.2019