

Dwarf Cricket, *Stenonemobius gracilis* (Jakovlev, 1871) (Orthoptera: Trigonidiidae), new to Croatian fauna

Tajnoviti patuljasti šturak, *Stenonemobius gracilis* (Jakovlev, 1871) (Orthoptera: Trigonidiidae), novi za hrvatsku faunu

Josip Skejo^{1,2,*}, Slobodan Ivković², Toni Koren³

¹ Faculty of Science, University of Zagreb, Department of Biology, Evolution Lab, 10 000 Zagreb

² Staatliches Museum für Naturkunde Karlsruhe, Erbprinzenstraße 13, 76133 Karlsruhe, Germany

³ Association Hyla, Zagreb, Croatia, Association Hyla, 10 000 Zagreb, Croatia; Alexanor, obrt za prirodoslovna istraživanja i savjetovanja, Šipkovića 20a, 10 000 Zagreb

* Corresponding author: E-mail address: jskejo@biol.pmf.hr (J. Skejo)

Abstract

Stenonemobius gracilis (Jakovlev, 1871) is an elusive cricket species whose presence in Croatia was expected, but never confirmed. Herewith we report that the Dwarf Cricket has been found in Croatia for the first time, in Kamenjak, Premantura, Istria in 2021. This is the 189th Orthoptera species reported from Croatia. The short note presents the photographic evidence of the species presence and describes its habitat. Identification tips given are useful for *S. gracilis* separation from *S. bicolor ponticus* Gorochoy, 1984, another species of the genus inhabiting the country, whose new record is presented-Lanterna bay in Istria.

Key words: faunistics, checklist, new records, Croatia, Istria, Kamenjak, Gryllidae, Nemobiinae, *Stenonemobius bicolor ponticus*.

Sažetak

Stenonemobius gracilis (Jakovlev, 1871) neobična je vrsta šturka čija se prisutnost u Hrvatskoj očekuje, ali dosad nije potvrđena. Napokon predstavljamo prvi nalaz tajnovitog patuljastog šturka u Hrvatskoj, na rtu Kamenjak (Premantura, Istra) 2021. godine. Ovo je 189. vrsta ravnokrilca u Hrvatskoj. Kratko priopćenje donosi fotografski dokaz o prisutnosti vrste i opisuje njezino stanište. Ukratko smo objasnili svojstva po kojima se razlikuju *S. gracilis* od *S. bicolor ponticus* Gorochoy, 1984, druge vrste ovog roda koja živi u Hrvatskoj, a od koje isto imamo jedan novi nalaz, u uvali Lanterna u Istri.

Ključne riječi: faunistika, popis vrsta, novi nalaz, Hrvatska, Istra, Kamenjak, Gryllidae, Nemobiinae, *Stenonemobius bicolor ponticus*.

Introduction – Uvod

Croatian Orthoptera fauna currently counts 188 species (Skejo et al. 2018, Stalling et al. 2021, Čato & Zagorac 2021, Péliissié et al. 2023). New records and new species discoveries are expected, especially in the true crickets' group, infraorder Gryllidea, which are among the most understudied groups of Orthoptera in Croatia and neighboring countries (e.g., Stalling & Birrer 2013, Stalling et al. 2021).

This study presents new records of one of the most elusive crickets in Europe, the genus *Stenonemobius* Gorochov, 1981. Only one species of the genus was known till now from Croatia, *S. (Ocellonemobius) bicolor* (Saussure, 1877), more specifically its subspecies *S. b. ponticus* Gorochov, 1984, but even for this species the records were scarce (Chobanov et al. 2016, Skejo et al. 2018).

The aims of the study are to present, for the first time, records of *S. gracilis* (Jakovlev, 1871) from Croatia, new records of *S. bicolor ponticus* from the country, and a brief overview of the identification traits important to separate the two species.

Material and methods – *Materijali i metode*

The specimens were identified using original descriptions of *S. gracilis* (Jakovlev 1871) and *S. bicolor ponticus* (Gorochov 1984), as well as with comparison with the specimens from the Orthoptera Species File (Cigliano et al. 2024). Taxonomy follows Cigliano et al. (2024).

The photographs of *Stenonemobius gracilis* were taken by Olympus TG-5 on 20th June 2021 in Croatia: Istria: Premantura (44.808618, 13.909503) (Figure 1) by TK and uploaded to iNaturalist in February 2024 (observations 199085469, 198996072, Figures 2e, 2f). Rt Kamenjak, Premantura (Figure 3) is the southernmost point of the Istrian Peninsula and is rather unique in the diversity of plants (Vuković et al. 2011, Bogdanović et al. 2018) and animals (Koren 2022).

An unpublished record of *Stenonemobius bicolor ponticus* (Figure 2a, 2b) was found in Stuttgart State Museum of Natural History (SMNS). The label says “CR-Pula:Lanterna Bucht u. Steinbruch, Lux. 13.37 E 45.17 N 14.08.01., leg. Rieger”, but the coordinate seems to be wrong so Arkod (<https://preglednik.arkod.hr/>) was consulted to find that they represent 13° 37' E, 45° 17' N, instead of decimal coordinates, and that uvala Lanterna Bay is not close to Pula. The decimal coordinates are 45.283E, 13.617N (30–40 m a. s. l.).

Results and discussion – *Rezultati i rasprava*

Dwarf Cricket, *Stenonemobius gracilis*

Stenonemobius gracilis (Jakovlev, 1871), with type locality Astrakhan Oblast, Russia (Hr. tajnoviti patuljasti šturak), has not been recorded in Croatia till now. The record from Kamenjak (Figures 2e, 2f) represents the first record of the Dwarf Cricket in the country.

The species was attracted to moth-collecting tents consisting of a metal frame with UV lamps connected to a 12 V battery. Only a single specimen was attracted that night, and seven tents were used. The specimen climbed onto the tent from the outer side and rested there during the evening and was photographed both in the light tent and in nature. The habitat in which it was recorded is the edge of coastal evergreen forests and maquis, grasslands, specifically *As. Chrysopogoni-Euphorbietum nicaeensis* H-ić. (1956) 1958 with a significant presence of *Juniperus oxycedrus* bushes (Figure 3).

The species is relatively widespread as it inhabits Portugal, Spain, France, Italy (incl. Sardinia, Sicily), Malta, southern Albania, northern Macedonia, Greece, Turkey, Georgia, and northern Africa (Cassar 2004, Hochkirch et al. 2016, Mulder & Mulder 2020, Cigliano et al. 2024). However, almost nothing is known about its ecology, habitat preference or life cycle. Because of its elusive nature, we suggest the Croatian name “tajnoviti patuljasti šturak”, “tajnoviti” meaning “secretive”, while “patuljasti šturak” means “dwarf cricket”.

It can be hypothesized that *S. gracilis* has a somewhat longer activity period than its relative *S. b. ponticus*, but this could also be due to different species ecology and *S. gracilis* being more commonly observed by professional and amateur naturalists. Namely, *S. gracilis* season starts at the end of the May (N=1), slowly growing in June (N=3) and July (N=8), while reaching the peak in August, when most iNaturalist observations were taken (N=32), and then ending in September (N=10), with no observations by the October (seasonality graph available at <https://www.inaturalist.org/taxa/626351-Stenonemobius-gracilis>).



Figure 1 Distribution map of the species of the genus *Stenonemobius* in Croatia. Blue dot represents the first record of *S. gracilis* while red dots represent the records of *S. bicolor ponticus* in Croatia.

Eastern Dwarf Cricket, *Stenonemobius bicolor ponticus*

Stenonemobius bicolor ponticus Gorochoy, 1984, with type locality Suhumi, Georgia (Hr. dugokrili patuljasti šturak), was known only from a few historical M. Padewieth, i.e., Franjo Dobijaš's 1910s records from Senj surroundings, identified originally as "*Nemobius tartarus* det. Ramme" (Chobanov 2003, Puskás et al. 2018, Cigliano et al. 2024) (Figure 1). Interestingly, Padewieth (1900) did not mention any similar species among "*Gryllodea*" earlier. A record of a gryllid species from 1925 identified as *Pteronemobius tartarus* by G. Müller in Trieste Museum, from Korčula, Lumbarda might also represent this (sub)species (Skejo et al. 2018) (Figure 1).

Eastern Dwarf Cricket distribution is not a well-understood one, as the subspecies has scattered findings in Europe. It is known from Croatia, Hungary, Bulgaria, Romania, Serbia, Crimea, Georgia, and Armenia (Gorochoy 1984, Popov 2007, Chobanov et al. 2016). The nominal subspecies, *S. b. bicolor* (Saussure, 1877) inhabits India, Sri Lanka, and Indochina (Cigliano et al. 2024).

A female from the Stuttgart State Museum of Natural History labeled "CR-Pula: Lanterna Bucht u. Steinbruch, Lux. 13.37E 45.17N 14.08.01., leg. Rieger" represents the most recent record of *Stenonemobius bicolor ponticus* in Croatia and the first record of this species in the Istrian region, despite being 23 years old. The correct coordinates are 45.283E, 13.617N (30–40 m a. s. l.). The specimen was identified by Slobodan Ivković (Figure 2a, 2b).

It seems that *S. bicolor ponticus* has a rather short activity period, as the majority of the records (N=21) were observed in August, the minority (N=4) in September, and no observations during the rest of the year (seasonality graph available at <https://www.inaturalist.org/taxa/857445-Stenonemobius-bicolor>). It is either a rare species or a species we do not understand, so an overlooked one.

On identification of *S. gracilis* and *S. bicolor ponticus*

Two main characteristics to differentiate the two *Stenonemobius* species inhabiting Croatia are body size and antennal scapus width. *Stenonemobius bicolor ponticus* is larger and more robust than *S. gracilis* (Figures 2a, 2c). In *S. bicolor ponticus* one scapus is wider than the distance between two scapi, while in *S. gracilis* it is narrower (Figures 2b, 2d).

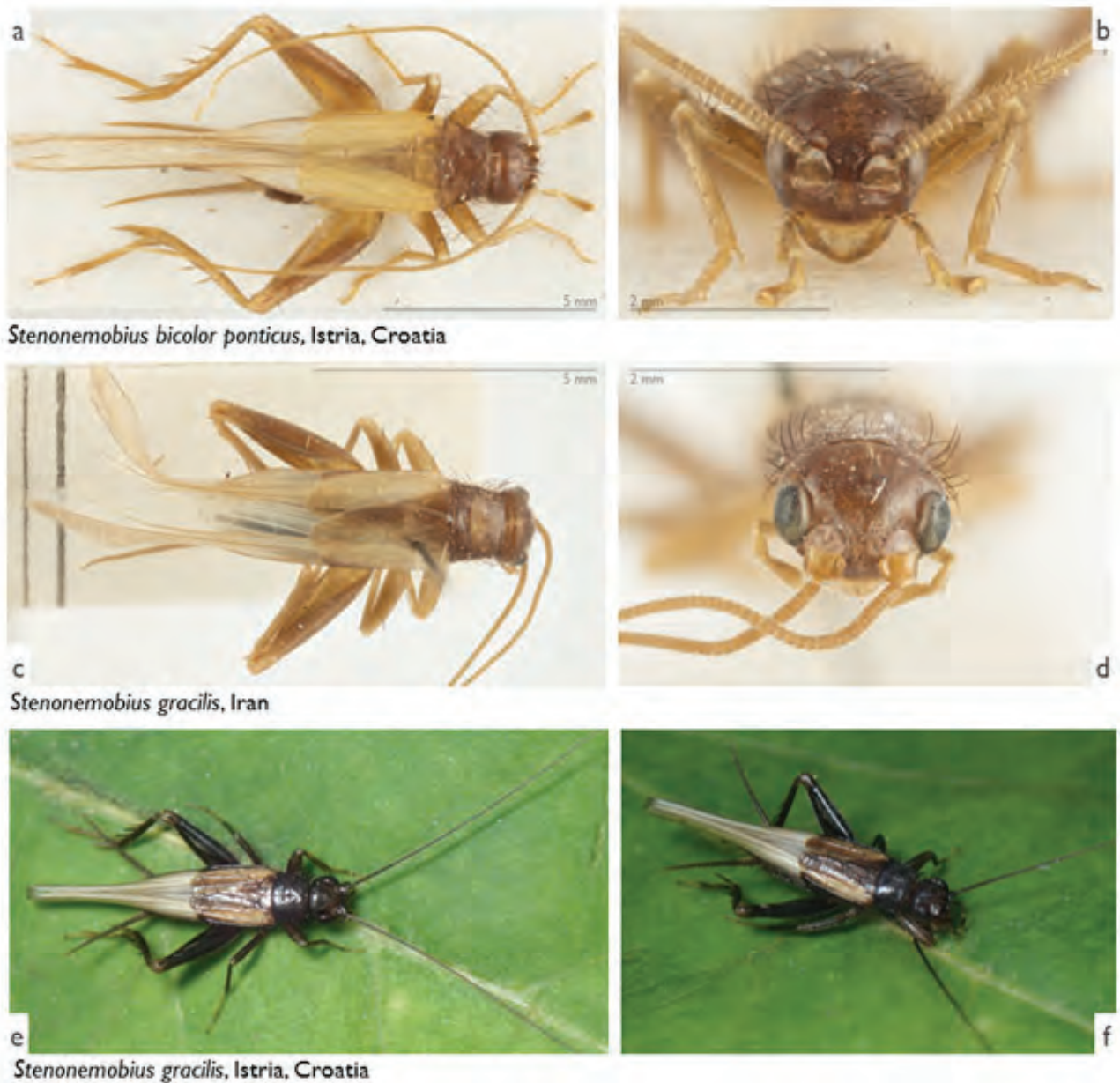


Figure 2 *Stenonemobius bicolor ponticus*, Croatia (a–b) and *S. gracilis* (c–d, e–f). a) *S. bicolor ponticus* dorsal view, b) *S. bicolor ponticus* frontal view, c) *S. gracilis* from Iran, dorsal view, d) *S. gracilis* frontal view, e) *S. gracilis* first record from Croatia (Istria) photo T. Koren, f) *S. gracilis* first record from Croatia (Istria) photo T. Koren.



Figure 3 The locality where *Stenonemobius gracilis* was recorded in Croatia for the first time. Habitat in Donji Kamenjak, Plovanije locality.

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