

**First record of *Paromius gracilis* from Hungary
(Hemiptera: Heteroptera: Rhyparochromidae)**

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Abstract – *Paromius gracilis* (Rambur, 1839) (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae: Myodochini), a species broadly distributed in the Afrotropical region and subtropical parts of Eurasia, is reported for the first time from Hungary, considerably extending its known range. The identification, distribution and bionomics of the species are reviewed and the significance of the new record is briefly discussed.

Key words – true bug, seed bug, faunistics, area expansion, Mediterranean species

INTRODUCTION

Members of the genus *Paromius* Fieber, 1860 (Hemiptera: Heteroptera: Rhyparochromidae: Rhyparochrominae: Myodochini) are readily recognizable based on their elongate, parallel-sided body and relatively long appendages, glabrous integument, and their pronotum being provided with a broad, V-shaped anterior collar with its posterior margin angulately broken in the midline (Figs 1–3) (HARRINGTON 1980, PÉRICART 1999). The genus currently comprises 16 valid species, distributed in all major zoogeographic regions (SLATER 1964, HARRINGTON 1980, SLATER & O'DONNELL 1995, PÉRICART 2001, DELLAPÉ 2005); only one of them, *P. gracilis* (Rambur, 1839) (the type species of *Paromius*) occurs in Europe, but so far it has been recorded exclusively from the Mediterranean Basin.

A single individual of *P. gracilis* has been collected in central Hungary, considerably extending the known range of the species. The present contribution briefly reviews the identification, distribution and bionomics of the species and provides a discussion of the significance of the new record.

MATERIAL AND METHODS

Digital photographs were taken using a Nikon D90 camera equipped with an AF-S Micro Nikkor 60mm f/2.8G ED macro lens. The distribution map was edited manually from a template generated using the free application of SHORHOUSE (2010).

TAXONOMY

Paromius gracilis (Rambur, 1839) (Figs 1–4)

Material examined – Hungary: Pest county, Ócsa, Alsópakony, 47.303°N 19.305°E, 110 m, dry meadow on sand, 4.VIII.2019, leg. D. Rédei (1 female, deposited in the Hungarian Natural History Museum, Budapest) (Figs 1–3).

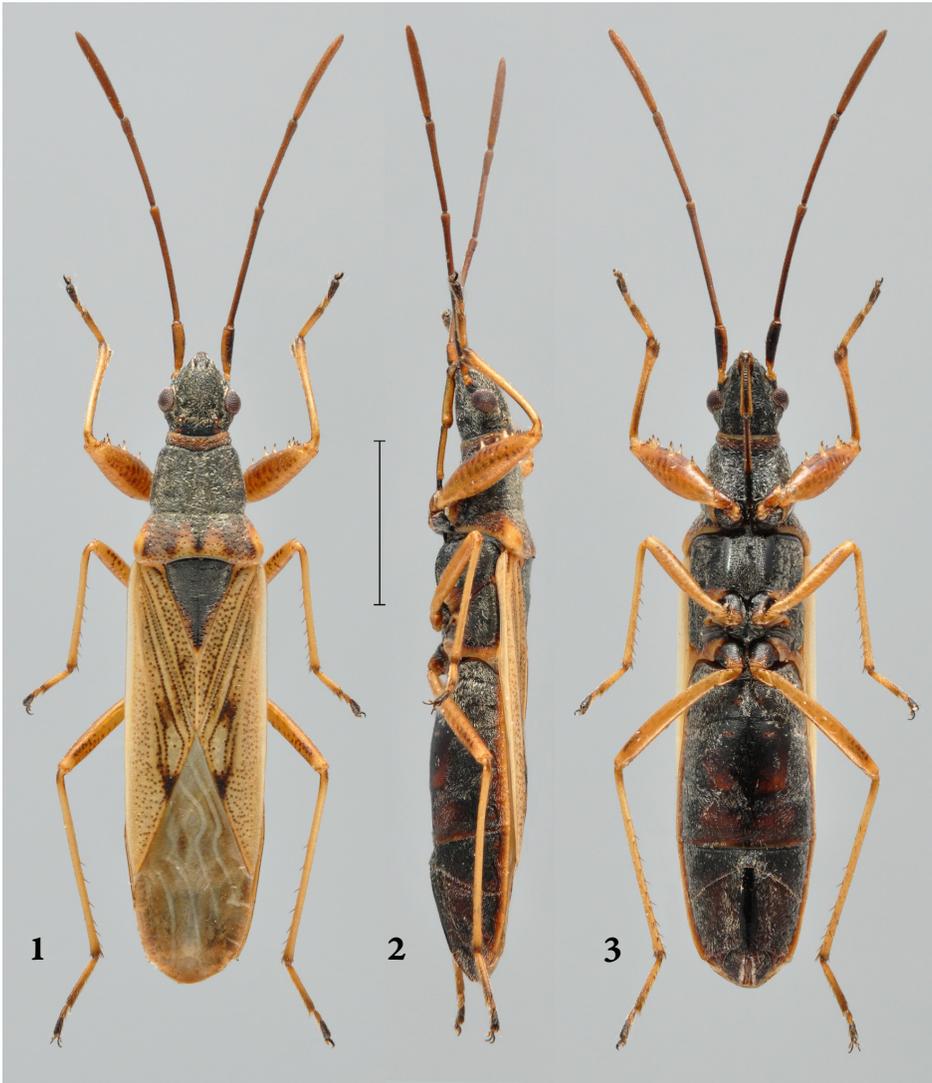
Identification, taxonomy – The species is evidently dissimilar from all lygaeoids so far recorded from Hungary. Although no revision or key to the species of *Paromius* is available, as it is the single member of the genus occurring in Europe, *P. gracilis* readily can be recognized based on the generic characters provided in the Introduction. The species was re-described by PÉRICART (1999), various parts of the male genitalia were illustrated by PÉRICART (1999) and HWANG *et al.* (2014). The taxonomic history of the species was summarized and its synonyms were listed by SLATER (1964), SLATER & O'DONNELL (1995) and PÉRICART (1999, 2001).

Distribution – The species is broadly distributed in Africa and Eurasia, summarized in detail by PÉRICART (1999, 2001). It is found all over Africa (including Madagascar) in the subtropical areas and in the zone of tropical grasslands and savannas. In Eurasia it is strictly subtropical, extending from the Mediterranean through the Irano-Turanian Region and the sub-Himalayan belt up to subtropical East Asia (southern Korea, southern China, Japan, Taiwan). Its distribution in the West Palaearctic is shown in Fig. 4, compiled from the data provided by PÉRICART (1999) and references cited therein; a few additional localities of significance were plotted based on records provided by RUS & KMENT (2006), GOGALA (2007), TEZCAN *et al.* (2010), YAZICI *et al.* (2015) and MAUREL (2016).

A single old record from Hungary (HORVÁTH 1897), uncritically cited by a few subsequent authors (STICHEL 1959, SLATER 1964), now pertains to Croatia due to subsequent changes in the political boundaries. Accordingly, the specimen reported in the present paper represents a new record for Hungary.

Habitat and bionomics – According to the primary literature reviewed by PUTSHKOV (1969) and PÉRICART (1999), in southern Europe the species is found

primarily in xerothermic habitats, but it has also been recorded from halophilous vegetation (in southern France), riverine wetlands, and thickets of oleander (both in Turkey). It is associated with Poaceae, particularly members of the genera *Andropogon* and *Imperata*. It is univoltine, overwinters in the adult stage. Available information on its bionomics outside of Europe is scarce; it has been recorded from *Ischaemum* spp. from South Korea (HWANG *et al.* 2014).



Figs 1–3. *Paromius gracilis* (Rambur, 1839), female from the environs of Ócsa, Hungary, 1 = dorsal view, 2 = lateral view, 3 = ventral view. Scale bar = 2 mm.

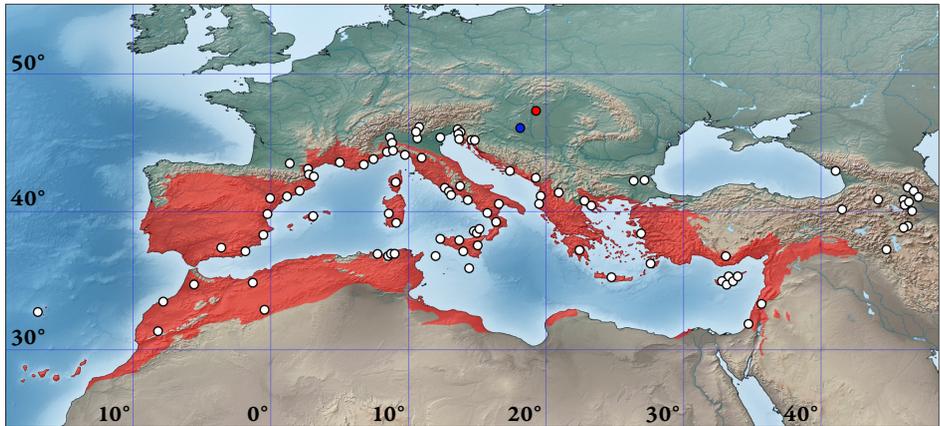


Fig. 4. Geographic distribution of *Paromius gracilis* (Rambur, 1839) in the West Palearctic. White circles represent previous literature records, red circle indicates the new record from the environs of Ócsa, blue circle the record from Siklós uploaded to the online citizen science platform izeltlabuak.hu. The zone of Mediterranean forests, woodlands and scrub is marked with red shading.

DISCUSSION

Several non-indigenous species of Heteroptera invaded Hungary during the past three decades; a good, albeit due to the high number of subsequently arrived species now outdated overview was provided by KONDOROSY (2012). Some of them, e.g. the coreid *Leptoglossus occidentalis* Heidemann, 1910 (first detection: 2004) (HARMAT *et al.* 2006), the lygaeid *Belonochilus numenius* (Say, 1832) (first detection: 2012) (TORMA 2012) or the pentatomid *Halyomorpha halys* (Stål, 1855) (first detection: 2013) (VÉTEK *et al.* 2014) are of overseas origin and clearly arrived to Europe passively by human transport. Others were previously present in the Mediterranean Basin, but at a certain point of time each of them started to expand their area northwards, frequently quite rapidly. The latter group includes e.g. the lygaeoid species *Arocatus longiceps* Stål, 1872 (first detection: 1990) (KONDOROSY & SZEŐKE 1998) and *Oxycarenus lavaterae* (Fabricius, 1787) (first detection: 1994) (KONDOROSY 1995), and the pentatomids *Nezara viridula* (Linnaeus, 1758) (first detection: 2002) (RÉDEI & TORMA 2003) and, most recently, *Acrosternum heegeri* Fieber, 1861 (first detection: 2015) (KÁROLYI & RÉDEI 2017); although human-mediated transport might have facilitated their spread, it is likely that the main factor that assisted their establishment in the Carpathian Basin was the gradually warming climate.

Paromius gracilis occurs sporadically in the Mediterranean Basin and, although occasionally it might be abundant locally, it is generally infrequent and relatively rarely encountered. So far it has been known to be restricted strictly

to the vegetational zone of Mediterranean forests, woodlands and scrub; the present record conspicuously falls outside of the known native range of the species (nearest populations of the species are known from areas of Illyrian vegetation in Croatia and Slovenia, at a distance of about 400 km in the southwest from the locality at Ócsa) (Fig. 4), therefore the occurrence of the species in central Hungary is unexpected and fairly surprising. Such an isolated occurrence for many species would likely indicate a passive human-assisted spread, as it was argued by KÁROLYI & RÉDEI (2017) for *Acrosternum heegeri*. *Paromius gracilis* is, however, generally found in natural habitats, it is not associated with human environment, and normally it is not found on agricultural crops or ornamental plants. The location where the first specimen was collected is a dry meadow (in fact an abandoned agricultural field) on sandy soil somewhat similar to the natural habitats of the species in southern Europe, albeit surrounded by plowed fields; it lies relatively far outside of human inhabitations (the nearest settlement, Ócsa, located about 4.5 km in the west, is a small town with a population of about 9000). A photo of another individual, taken in the vicinity of Siklós, Baranya county, southern Hungary (45.882°N 18.261°E) at an altitude of 274 m, on 1.V.2021, by R. Futó, D. Horváth, B. Károlyi, Z. Körmendy, M. Lukátsi and Z. Nagy, uploaded to the online citizen science platform izeltlabuak.hu* by Z. Körmendy, pertains to this species; the habitat at that locality is a grassland on the southern slopes of the Villány Mts., characterized by a warm microclimate of distinct Mediterranean character. Because of the above circumstances it seems likely that the present records are a result of natural spread due to the warming climate rather than an artificial introduction. The isolated occurrences might be explained by the fact that the species is inconspicuous and, as it normally does not occur in human inhabitations, easily overlooked; it might be already established in the southern part of Hungary, but possibly has remained undetected due to its low abundance and particularly the low collecting activity in the region. A targeted search for the species in suitable habitats in southern Hungary would be needed for a better understanding of its spread.

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* <https://www.izeltlabuak.hu/talalat/181036>

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