

# First record of the assassin bugs *Zelus renardii* Kolenati, 1857 (Heteroptera, Reduviidae) in Uzbekistan

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This study was conducted in Tashkent in 2022 – 2023. As a result of this study, the species *Zelus renardii* Kolenati, 1857, was discovered for the first time for the fauna of Uzbekistan. *Zelus renardii* is an invasive species that has recently been actively spreading in new territories for it. Most likely, the samples we found were imported to Uzbekistan from Turkey.

Acta Biologica Sibirica 9: 397–402 (2023) doi: 10.5281/zenodo.8105295

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Academic editor: R. Yakovlev | Received 15 April 2023 | Accepted 22 June 2023 | Published 5 July 2023

<http://zoobank.org/17520430-0B14-4A55-99FA-6E2C69C976C1>

**Citation:** Musaev DM, Akhmedov AG, Mirzaeva GS, Kholmatov BR, Medetov MZh (2023) First record of the assassin bugs *Zelus renardii* Kolenati, 1857 (Heteroptera, Reduviidae) in Uzbekistan. Acta Biologica Sibirica 9: 397–402. <https://doi.org/10.5281/zenodo.8105295>

## Keywords

Assassin bugs, invasive species, Heteroptera, Reduviidae, Uzbekistan, *Zelus renardii*

## Introduction

The Reduviidae of Central Asia are in a very difficult state, and Putshkov focused more on their research in the 20th century. There are not reports that generalize about this group, and many of his investigations remained unreported. Certain taxa's positions, geographic ranges, and characteristics of their way of life are not well understood.

A fascinating and varied family of primarily carnivorous insects, the Reduviidae. This family contains approximately 7000 species overall, distributed among 1000 genera and 29 subfamilies (Ghahari et al. 2013, V.G. Putshkov and P.V. Putshkov 1996; Aukema et al. 1996, 2013).

The Nearctic fauna representative species *Zelus renardii* Kolenati, 1857 which was invasive in Palearctic land, was identified for the first time in Uzbekistan's fauna. More and more information regarding the spread of this species' range in southern Europe has recently come to light. (Kment & Van Der Heyden 2022).

Nearctic species, native to the Western and Southwestern United States of America and northern Central America (Kment & van Der Heyden 2022), introduced in Palearctic Region: Albania (van der Heyden 2017), Croatia (Kment & van Der Heyden 2022), Czech (Kment & van Der Heyden 2022), Germany (van der Heyden 2021), France (Garrouste 2019), Greece (Davranoglou 2011; Petrakis & Moulet 2011), Israel (van der Heyden 2017), Italy (Cisneros & Rosenheim 1997; Dioli 2013), Portugal (van der Heyden & Grosso-Silva 2020), Spain (Baena & Torres 2012; Vivas 2012), Turkey (Çerçi & Koçak 2016), Canary Islands (Baena & Santos 2021).

## Materials and methods

The basis for the article was the personal collections of the authors held in the city of Tashkent. In the Tashkent Botanical Garden (Fig. 1) and Institute of Horticulture, Viticulture and Wine-making, as part of a project to study the fauna of the Heteroptera of Uzbekistan in 2022 and materials stored in the personal collections of the authors of this article. The collection and processing of the material was carried out according to generally accepted methods: mowing with a standard entomological net on grass and tree-shrub vegetation, manual collection from the soil surface and forage plants (Kiritshenko 1957; Golub 2012). The systematic position of species and nomenclature are given in accordance with the Catalog of Hemiptera of the Palearctic (Aukema et al. 1996, 2013).

## Result

### Family Reduviidae

### Subfamily Harpactorinae

### Genus *Zelus*

### *Zelus renardii* Kolenati, 1857: 458

Fig. 2.

**Material.** 1♀, "Uzbekistan, Tashkent, The Academician Makhmud Mirzaev scientific-research Institute of Horticulture, Viticulture and Wine-making, 09.09.2022, 41°25'17.07"N 69°19'25.82"E D. Musaev & A. Akhmedov. leg."; 1♀, "Uzbekistan, Tashkent "Botanickeskiy sad" [botanical garden], 15.03.2023, D. Musaev & A. Akhmedov. leg." (Fig.1).

First record for Uzbekistan. Both specimens are stored in the Zoological collection of the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan.



**Figure 1.** Tashkent Botanical Garden. Places of finds of *Zelus renardii*.



**Figure 2.** View from dorsal and ventral parts of *Zelus renardii*.

Is a medium-sized Hemiptera that is 11 to 14 mm in length. The lower portion of the body is a greenish-yellow tint. It has a yellow-brown top. Corium has paler venation and is crimson. With a cylindrical head, tiny, ruby eyes, and a thick, curving proboscis, the body is long and stocky. The shins and paws are yellow, whereas the rest of the legs are green. The shield has not protrusions and is long. The final segment of the ventral abdominal wall has a hooked median process at the apex and is thin. The tiny, lidded, light brown, cylindrical eggs have an elongated form. They are piled up in a big heap.

The female was placed in an insectarium and maintained at a temperature of 25°C in controlled laboratory conditions. The next day, the female laid 39 eggs (Fig.3), and the day after she died. The larvae emerged from the eggs after 9 days (Fig.4). Unfortunately, we failed to bring the larvae to the imago.



**Figure 3.** *Zelus renardii* eggs in Petri dish.



**Figure 4.** *Zelus renardii* larva in Petri dish.

## Discussion

We have two opinions on the ways of penetration of this species into Uzbekistan. The first is that, at the research Institute of Horticulture, Viticulture and Winemaking, receives many tree seedlings from foreign countries, including Turkey; it is very likely that this species has penetrated into Uzbekistan together with seedlings. The Botanical Garden also quite often receives plant material from abroad.

The second opinion is that this species could have entered Uzbekistan from neighbor countries, possibly from Kazakhstan.

## References

Aukema B, Rieger C, Rabitsch W (2013) Catalogue of the Heteroptera of the Palaearctic Region. VI. Supplement. The Netherlands Entomological Society, Amsterdam, xxiii + 629 pp.

Baena M, Santos S (2021) *Zelus renardii* Kolenati, 1857, primera cita en las Islas Canarias (Hemiptera, Reduviidae). Revista Gaditana de Entomología 12: 131-135.

- Baena M, Torres JL (2012) Nuevos datos sobre heterópteros exóticos en España y Francia: *Tempyra biguttula* Stål, 1874, *Belonochilus numenius* (Say, 1832) y *Zelus renardii* (Kolenati, 1856) (Heteroptera: Rhyparochromidae, Orsillidae, Reduviidae). Boletín de la Asociación Española de Entomología 36: 351–360.
- Cisneros JJ, Rosenheim JA (1997) Changes in the foraging behavior, within-plant vertical distribution, and microhabitat selection of a generalist insect predator: an age analysis. Environmental Entomology 27 (4): 949–957. <https://doi.org/10.1093/ee/27.4.949>
- Çerçi B, Koçak Ö (2016) Contribution to the knowledge of Heteroptera (Hemiptera) fauna of Turkey. Journal of Insect Biodiversity 4 (15): 1–18. <http://dx.doi.org/10.12976/jib/2016.4.15>
- Davranoglou LR (2011) *Zelus renardii* (Kolenati, 1856), a New World Reduviid discovered in Europe (Hemiptera: Reduviidae: Harpactorinae). Entomologist's Monthly Magazine 147: 157–162.
- D'Hervé FE, Olave A, Dapoto GL (2018) *Zelus renardii* (Hemiptera: Reduviidae: Harpactorinae: Harpactorini): first record from Argentina. Revista de la Sociedad Entomológica Argentina 77 (1): 32–35. <https://doi.org/10.25085/rsea.770106>
- Dioli P (2013) *Zelus renardii* (Kolenati, 1856) (Insecta Heteroptera Reduviidae). Quaderno di Studi e Notizie di Storia Naturale della Romagna 38: 232–233.
- Garrouste R (2019) *Zelus renardii* (Kolenati, 1856): une réduve nouvelle pour la France (Hemiptera, Reduviidae, Harpactorinae). Bulletin de la Société Entomologique de France 124 (3): 335–336. [http://dx.doi.org/10.32475/bsef\\_2086](http://dx.doi.org/10.32475/bsef_2086)
- Ghahari H, Moulet P, Cai W-Zh, Karimi J (2013) An annotated catalog of the Iranian Reduvidae (Hemiptera: Heteroptera: Cimicomorpha). Zootaxa 3718 (3): 201–238. <http://dx.doi.org/10.11646/zootaxa.3718.3.1>
- Golub VB, Tsurikov MN, Prokin AA (2012) Insect collections: collection, processing and storage of material. KMK Scientific Press Ltd., Moscow, 339 p. [In Russian]
- Kiritshenko AN (1957) Methods of collecting true bugs and investigation of local faunas. Academy of science of USSR, Moscow – Leningrad, 123 p. [In Russian]
- Kment P, van der Heyden T (2022) *Zelus renardii* (Hemiptera: Heteroptera: Reduviidae): first records from Croatia, Montenegro, and an accidental introduction to the Czech Republic. Acta Faunistica 16: 7–14. <http://dx.doi.org/10.5281/zenodo.6373854>
- Kolenati FA (1857) Meletemata entomologica. Fasc. VI. Hemipterorum Heteropterorum Caucasi. Harpagocorisidae, monographice dispositae. Bulletin de la Société Impériale des Naturalistes de Moscou 29 [1856]: 419–502.
- Petrakis PV, Moulet P (2011) First record of the Nearctic *Zelus renardii* (Heteroptera, Reduviidae, Harpactorinae) in Europe. Entomologia Hellenica 20: 75–81. <https://doi.org/10.12681/eh.11511>
- Putshkov VG, Putshkov PV (1996) Heteroptera of the Ukraine: checklist and distribution. St. Petersburg, 108 p. [In Russian]
- van der Heyden T (2017) First records of *Zelus renardii* (Kolenati, 1856) Hemiptera: Heteroptera: Reduviidae: Harpactorinae) for Albania. Arquivos Entomológicos 18: 49–50.
- van der Heyden T, Grosso-Silva JM (2020) First record of *Zelus renardii* Kolenati, 1856 in Portugal (Heteroptera: Reduviidae: Harpactorinae). Arquivos Entomológicos 22: 347–349.



van der Heyden T (2021) Erstfund von *Zelus renardii* Kolenati, 1856 in Deutschland (Heteroptera: Reduviidae). Heteropteron 61: 31-32.

Vivas L (2012) Primera cita en España de la especie *Zelus renardii* (Kolenati, 1857) (Heteroptera: Reduviidae) que representa la segunda cita en Europa. BV news Publicaciones Científicas 1 (6): 34-40.