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New records of true bugs (Heteroptera: Lygaeidae) for the fauna of Croatia and Bosnia and Herzegovina

Novi nalazi stjenica (Heteroptera: Lygaeidae) za faunu Hrvatske i Bosne i Hercegovine

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Abstract

The data on two new species for the Croatian fauna and one new species for the fauna of Bosnia and Herzegovina are given. *Caenocoris nerii* (Germar, 1847) represents a new genus and species for both countries, while *Tropidothorax sternalis* (Dallas, 1852) is recorded for the first time in Croatia. In addition, two new host plant species of *C. nerii* are reported, namely *Cynanchum acutum* L. and *Periploca graeca* L. (Apocynaceae), not previously mentioned as its hosts in the scientific literature.

Keywords: *Caenocoris nerii*, distribution, faunistics, first records, *Tropidothorax sternalis*

Sažetak

Dvije nove vrste stjenica zabilježene su za faunu Hrvatske i jedna nova vrsta za faunu Bosne i Hercegovine. *Caenocoris nerii* (Germar, 1847) predstavlja novi rod i vrstu za obje države, dok je vrsta *Tropidothorax sternalis* (Dallas, 1852) po prvi put pronađena u Hrvatskoj. Osim toga, *Cynanchum acutum* L. i *Periploca graeca* L. (Apocynaceae) zabilježene su kao nove biljke hraniteljice za stjenicu *C. nerii*, što do sada nije objavljeno u znanstvenoj literaturi.

Ključne riječi: *Caenocoris nerii*, rasprostranjenost, faunistika, prvi nalazi, *Tropidothorax sternalis*

Introduction - *Uvod*

This research puts the spotlight on two aposematic gregarious lygaeid bug species, both associated with Apocynaceae plant family. One of them is the oligophagous species *Caenocoris nerii* (Germar, 1847), feeding on *Nerium oleander* L. and *Periploca laevigata* Aiton, while the other one is *Tropidothorax sternalis* (Dallas, 1852), monophagous on *Cynanchum acutum* L. (Péricart 1998). *C. nerii* is South Mediterranean and Paleotropical species, in Europe distributed in Albania, Bulgaria, France, Greece, Italy, Malta, Portugal (Madeira), Serbia, and Spain (Péricart 1998; Josifov 1999; Lupoli 2008; Cuesta Segura et al. 2010; Simov 2011; Šeat et al. 2019). *T. sternalis* is species with Afrotropical-Mediterranean distribution, and until now in Europe, it was known only

from Spain and Southern Italy (Melber 1988; Péricart 1998; Olivieri 2013). The goal of this paper is to present the new records of the species mentioned above in Croatia and Bosnia and Herzegovina.

Materials and Methods - *Materijali i metode*

The work described in this paper is based on several collections and field observations carried out by the authors between 2020 and 2022. Most of the research took place within the Neretva River delta, the wetland shared by two countries, Croatia and Bosnia and Herzegovina. 70 % of the delta is situated on the Adriatic coast of Southern Croatia, and 30% in Bosnia and Herzegovina. It belongs to the Mediterranean phytogeographical region, while the most widespread and ecologically important vegetation type of the area is helophytic marshy vegetation (Vuković 2021).

Also, several scattered findings from the other parts of Dubrovnik Neretva County and Southern Herzegovina are added. Identification of the species was based on the morphological features described in Melber (1988) and Péricart (1998). Besides being the only representative of the genus *Caenocoris* in Europe, *C. nerii* is an easily recognizable species, characterized by a black-colored and elongated body, variegated with red. The legs are black with red-colored coxa, and distinctive teeth on the profemora (Péricart 1998). The *Tropidothorax* genera are characterized by the presence of one median and two marginal keels on the pronotum. The two species that are present in the European fauna, *T. leucopterus*, and *T.sternalis* can be distinguished by several morphological characteristics. Generally, *T. leucopterus* is larger species with an average body size of 8.9 mm in males, in contrast to the smaller *T. sternalis* with an average body size of males 7.5 mm. Additional differences are: the shape and arrangement of black markings, longer hairs on the lateral edges of pronotum and tibiae in *T. sternalis*, scutellum clearly keeled in *T. sternalis*, and weakly keeled in *T. leucopterus*, median keel on pronotum pronounced almost continuously in *T. sternalis*, while in *T. leucopterus* is indicated only in the frontal part (Fig 1) (Péricart 1998; Melber 1988). The nomenclature follows the Fauna Europaea database (de Yong et al. 2014). The collected specimens are stored in the Heteroptera collections of the Dubrovnik Natural History Museum and the National Museum of Bosnia and Herzegovina.

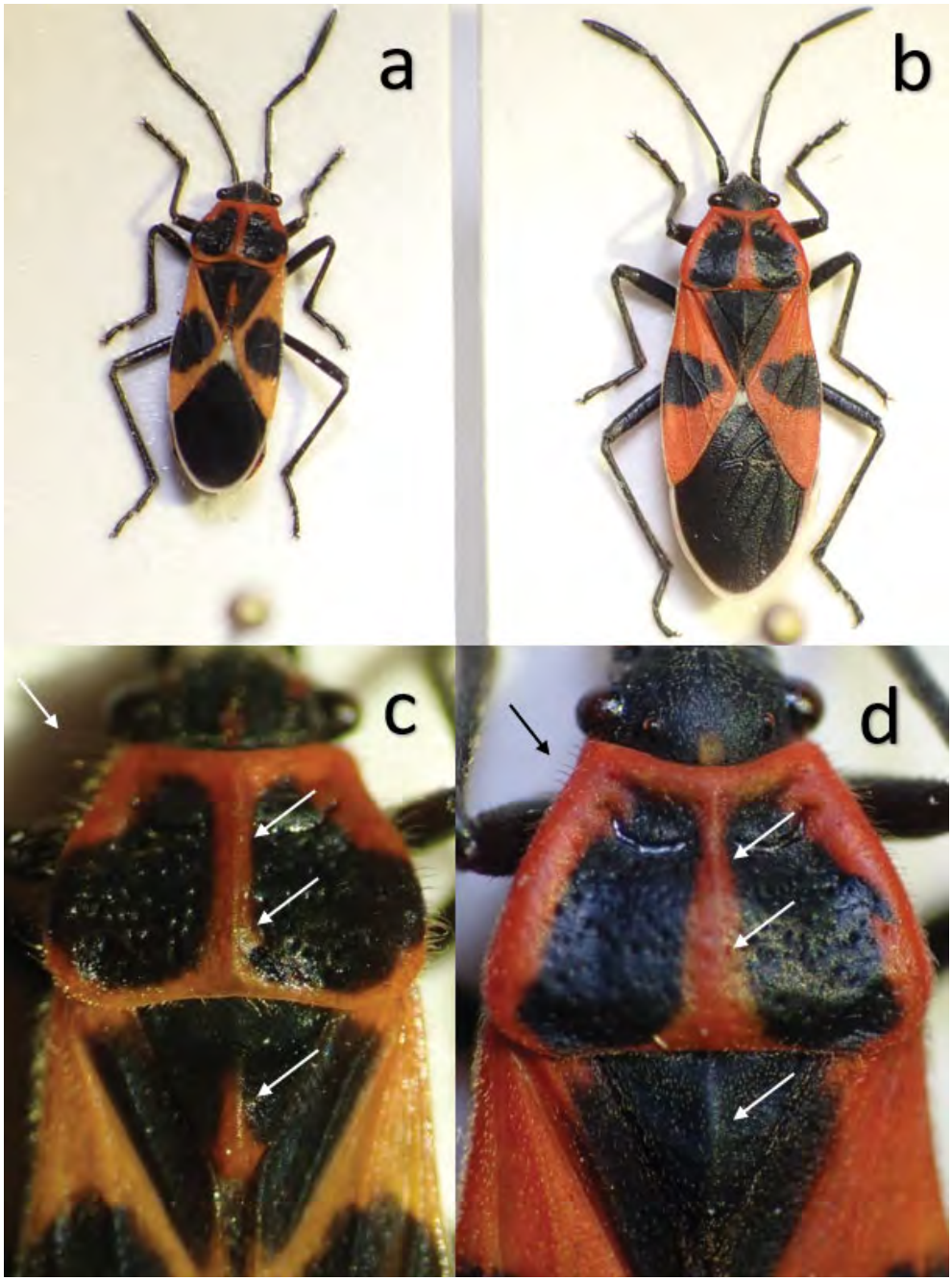

Figure 1 Comparison of morphological characters in *Tropidothorax sternalis* (Dallas, 1852) (a, c) and *Tropidothorax leucopterus* (Goeze, 1778) (b, d) males from Neretva River delta (Photo credit: Matea Martinović)

Slika 1. Usporedba morfoloških karakteristika kod mužjaka vrsta *Tropidothorax sternalis* (Dallas, 1852) (a, c) i *Tropidothorax leucopterus* (Goeze, 1778) (b, d) iz delte rijeke Neretve (autor fotografija: Matea Martinović)

Results and Discussion - *Rezultati i rasprava*

The Neretva River delta is the only area in Croatia where the reproduction of the African monarch, *Danaus chrysippus* (Linnaeus, 1758) occurs and the oviposition takes place on the host plant *Cynanchum acutum* L. (Koren et al. 2019). In late October 2020, the plants were examined for the presence of *D. chrysippus* through the delta again, and in addition to monarch eggs and caterpillars, two interesting lygaeid bug species, new for the Croatian fauna were recorded.

***Caenocoris nerii* (Germar, 1847)**

New records: Croatia: South of Galičak Hill, 43.021195 17.463299 obs. D. Dender, 25.10.2020, 6.11.2021; Beach Ušće, 43.014465 17.468316 leg. T. Koren & M. Martinović, 29.10.2020; Neretva River mouth, 43.022099 17.451922, leg. T. Koren & M. Martinović, 30.10.2020; Ploče, 43.047363 17.439186, obs. T. Koren, 30.10.2020; Komin, 43.040634 17.49544, obs. T. Koren & M. Martinović, 30.10.2020; Blace, 43.004237 17.471165, leg. M. Martinović, 30.10.2020; Trsteno Arboretum, 42.713164 17.971115, leg. M. Martinović, 30.5.2021; Klek, 42.945527 17.563582, leg. D. Kulijer, 17.9.2022, 8.10.2022, 11.11.2022; **Bosnia and Herzegovina:** Dračevo, 43.053415 17.695945, leg. M. Martinović, 31.10.2020; Neum, 42.926608 17.628019, leg. D. Kulijer, 29.05.2021; Krča, Trebižat, 43.133853 17.666919, leg. D. Kulijer, 27.07.2021.

Caenocoris nerii (Germar, 1847) was present at all five localities surveyed in the Croatian part of the delta. Single adult specimens or mixed nymph and adult aggregations were present on the leaves of *C. acutum* (Fig 2), often close to aggregations of *Tropidothorax leucopterus* (Goeze, 1778) previously known from the area (Novak and Wagner 1951). In the late May of 2021, a single specimen of *C. nerii* was recorded on *Nerium oleander* L. in Trsteno Arboretum close to Dubrovnik, just like the few adults found in Klek from September to November of 2022.

Figure 2 *Caenocoris nerii* (Germar, 1847) - aggregation on *Cynanchum acutum* L. in Komin, Croatia (Photo credit: Matea Martinović)
Slika 2. *Caenocoris nerii* (Germar, 1847) - agregacija na vrsti *Cynanchum acutum* L. u Kominu, Hrvatska (autor fotografije: Matea Martinović)

Driven by the first finding of *C. nerii* in the Croatian part of the delta, a quick survey of the Bosnian part was taken. Our expectation to find *C. nerii* for the first time in Bosnia and Herzegovina as well yielded a positive result, but this time on a different plant species. Numerous nymph and adult specimens were recorded feeding on seed pods of *Periploca graeca* L. on the eastern coast of the Neretva River in Dračevo (Fig 3). In May of 2021, few individuals were recorded in Neum on *N. oleander*, while in July it was abundant on *P. graeca* in Krča.

Figure 3 *Caenocoris nerii* (Germar, 1847) feeding on *Periploca graeca* L. seed pods in Dračevo, Bosnia and Herzegovina: a – adult, b – nymphs (Photo credit: Matea Martinović)

Slika 3. *Caenocoris nerii* (Germar, 1847) na plodovima vrste *Periploca graeca* L. u Dračevu, Bosna i Hercegovina: a – odrasli, b – ličinke (autor fotografija: Matea Martinović)

***Tropidothorax sternalis* (Dallas, 1852)**

New records: Croatia: Ploče, 43.047363 17.439186, obs. T. Koren, 30.10.2020; South of Kozjak Hill, 43.028792 17.474803, obs. Toni Koren, 4.8.2022; South of Galičak Hill, 43.021195 17.463299 leg. D. Dender, 6.11.2021.

The second species new for the Croatian fauna was *Tropidothorax sternalis* (Dallas, 1852), recorded only within the Neretva River delta. The first record dates from 30 October 2020 when a single adult specimen was photographed on *C. acutum* in Ploče. Two years after, one adult specimen was photographed again, this time attracted to a light tent during the moth surveillance of the area in the August of 2022. And finally, the Neretva River delta was visited again in early November of 2022 to confirm the presence of the species. A fast examination of *C. acutum* revealed aggregations of nymphs and adults of *T. sternalis* on the leaves (Fig 4), and several adult specimens were collected.

The surveys in Bosnia and Herzegovina did not result in any records of *T. sternalis*, but this is not surprising as the only host of the species, *C. acutum* is not found in the country.

Figure 4 *Tropidothorax sternalis* (Dallas, 1852) - aggregation on *Cynanchum acutum* L., South of Galičak Hill, Croatia (Photo credit: Dubravko Dender)

Slika 4. *Tropidothorax sternalis* (Dallas, 1852) – agregacija na vrsti *Cynanchum acutum* L., južno od brda Galičak, Hrvatska (autor fotografije: Dubravko Dender)

According to the literature, *C. nerii* was known to use *N. oleander and P. laevigata* as its host plants (Péricart 1998), and this survey adds *C. acutum* and *P. graeca* to the list. Both newly recorded host plant species are listed as Endangered (EN) in Croatia (Nikolić & Topić 2005). In Bosnia and Herzegovina, *C. acutum* is not present while *P. graeca* is considered a vulnerable (VU) species according to the Red list of wild species and subspecies of plants, animals, and fungi of the Federation of Bosnia and Herzegovina (Službeni list Federacije Bosne i Hercegovine 2014), the only red list available for the country. In Croatia, both species have scattered distribution in the Mediterranean region, while *P. graeca* is also present to a lesser extent in the Western Pannonian region (Nikolić & Topić 2005). The range of *P. graeca* in Bosnia and Herzegovina is mostly restricted to the valleys of Trebižat and Neretva Rivers and Hutovo Blato wetland in the south of the country (Đug et al. 2013).

The finding of *C. nerii* in the Mediterranean parts of both countries was expected as it fills the gap in its distribution through the Mediterranean. On the other hand, finding *T. sternalis* in Croatia was quite surprising given the fact it was only known to occur in Spain and Southern Italy (Péricart 1998; Olivieri 2013). While the two members of *Tropidothorax* genera exist in separate geographical areas in Spain, *T. sternalis* in the Southern half and *T. leucopterus* in the Northern half of the country (Montagud 2014), the Neretva River delta in Croatia is the a place where they co-exist sympatrically, together with *C. nerii*. The first record of *T. sternalis* in Croatia significantly extends the distribution of the species northwards.

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