

FIRST REPORT OF TWO LADYBIRDS, *OENOPIA DOUBLIERI* (MULSANT, 1846) AND *NOVIUS CARDINALIS* (MULSANT, 1850) (COLEOPTERA: COCCINELLIDAE) FOR BOSNIA AND HERZEGOVINA

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Abstract – Two ladybird species, *Oenopia doublieri* (Mulsant, 1846) and *Novius cardinalis* (Mulsant, 1850), are reported for the first time from Bosnia and Herzegovina. The records were collected from the Mediterranean region of the country by Neum in 2020 and 2021.

KEY WORDS: alien species, Balkan Peninsula, beetles, distribution, Mediterranean

Izvešček – PRVO POROČILO O DVEH PIKAKOLONICAH, *OENOPIA DOUBLIERI* (MULSANT, 1846) IN *NOVIUS CARDINALIS* (MULSANT, 1850) (COLEOPTERA: COCCINELLIDAE) ZA BOSNO IN HERCEGOVINO

Za Bosno in Hercegovino sta prvič prijavljeni dve vrsti pikapolonic, *Oenopia doublieri* (Mulsant, 1846) in *Novius cardinalis* (Mulsant, 1850). Podatki so bili zbrani v sredozemski regiji države pri Neumu v letih 2020 in 2021.

KLJUČNE BESEDE: tujerodne vrste, Balkanski polotok, hrošči, razširjenost, Sredozemlje

Introduction

Family Coccinellidae comprises more than 6.000 known species worldwide (Vandenberg 2002, Kovář 2007) out of which 196 species are found in Continental Europe (Nedvěd and Đurić 2022). The Coccinellidae fauna of Bosnia and Herzegovina is poorly known and the knowledge is mainly based on old data (e.g. Brandis 1890, Apfelbeck 1894, Martino 1948, Novak 1952, Mikšić 1953). According to Kovar (2007) 55 species are known for the country, while Canepari (2013) lists 57 species. Recently, *Harmonia axyridis* (Pallas, 1775) (Kulijer 2010, 2017) and *Ceratomegilla alpina* (Villa and Villa, 1835) (Kulijer 2015) were reported for the country, and this paper adds additional two species to the Coccinellidae fauna of

Bosnia and Herzegovina, *Oenopia doublieri* (Mulsant, 1846) and *Novius cardinalis* (Mulsant, 1850).

Materials and methods

The largest part of Bosnia and Herzegovina is occupied by mountains, with only small portion of eastern Adriatic coast within its boundaries, that includes the Neum city area and Klek Peninsula. This is the only region where many eumediteranean species and habitats can be found, and therefore significant for the overall biodiversity of the country (e.g. Kutleša and Lakušić 1964, Maslo and Milanović 2022, Koren and Kulijer 2023). The research was conducted at several locations within the Neum city area and Opuće Village at Klek Peninsula, from February 2020 to October 2021.

The survey methods included visual inspection and sweep net sampling. The collected specimens were stored in 70% ethanol and deposited in the entomological collections of the National Museum of Bosnia and Herzegovina.

Results and discussion

Based on available data *Oenopia doublieri* (Mulsant, 1846) and *Novius cardinalis* (Mulsant, 1850) were not reported for Bosnia and Herzegovina until now (Kovář 2007, Canepari 2013, Nedvěd and Djurić 2022). New ladybird species were found by Neum city at Adriatic coast (Fig. 1).

***Oenopia doublieri* (Mulsant, 1846)**

Material examined: Neum city, 28.02.2020., Loc. 1, 42.930064° N, 17.597804 E, 10 m a.s.l. (Fig. 1).

One specimen was found on a terrace wall of a house along the walking path by the sea, in the north-western part of Neum city (Fig. 1 and 2). *Oenopia doublieri* is a small (4-5 mm) ladybird. The ground color ranges from white to beige or pink. Pronotum has seven small black spots, the body is slightly convex and each elytron has eight spots that can be fused to form short lines (Nedvěd and Djurić 2022). The species is distributed in Europe and North Africa. In Europe is restricted to the Mediterranean basin where it is mostly found in lowland coniferous forests (Kovář 2007, Nedvěd and Djurić 2022).

***Novius cardinalis* (Mulsant, 1850)**

Material examined: Neum city (hotel Stella), 29.05.2021, Loc. 2, 42.927065° N, 17.612065° E, 45 m a.s.l.; Neum city, 19.10.2021., Loc. 3, 42.921976° N, 17.614131° E, 10 m a.s.l. (Fig. 3).

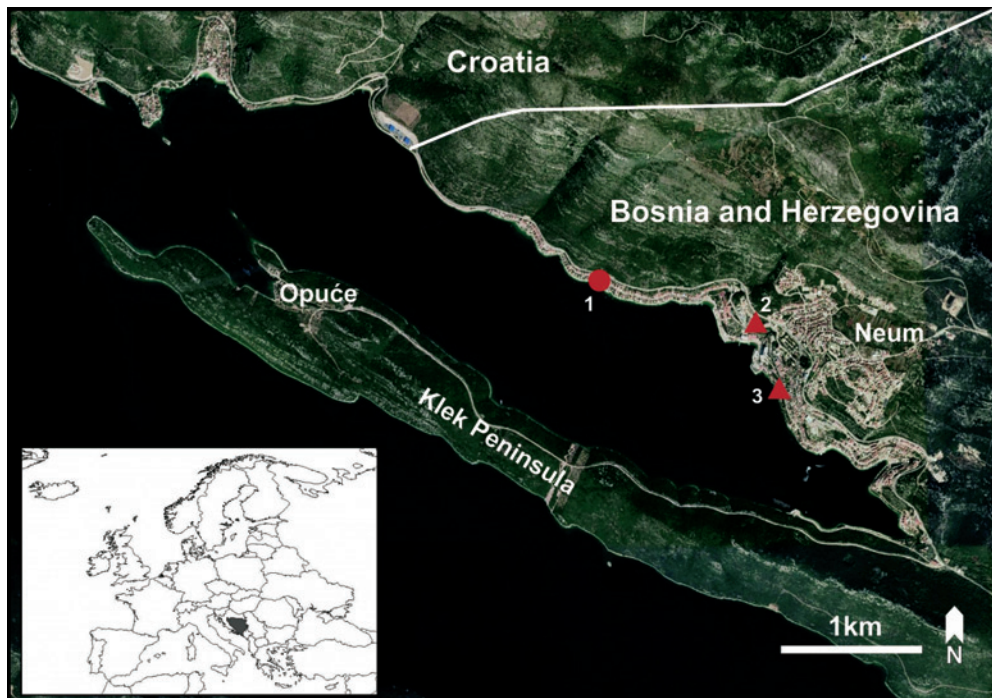


Figure 1. The finding sites of *Oenopia dublieri* (Mulsant, 1846) – circle, and *Novius cardinalis* (Mulsant, 1850) – triangle, in Bosnia and Herzegovina.

Slika 1. Najdišči *Oenopia dublieri* (Mulsant, 1846) – krog, in *Novius cardinalis* (Mulsant, 1850) – trikotnik, v Bosni in Hercegovini.



Figure 2. *Oenopia dublieri* (Mulsant, 1846) from Neum collected on 28 February 2020 (photo: D.Kulijer).

Slika 2. *Oenopia dublieri* (Mulsant, 1846) najdena pri Neumu dne 28.2.2020 (foto: D.Kulijer).

On 29th May 2021 one adult was observed on *Nerium oleander* growing along the street in Neum city. Additional five adults were found along the walking path by the sea, on 19th October 2021 (Fig. 1 and 3), by visual inspection or with use of sweep net on *Pittosporum tobira* and *N. oleander*, ornamental plants common in the Mediterranean region of the country. Most specimens were found on *P. tobira*. *Novius cardinalis* is a small (2,5-4 mm) oval ladybird with irregular black and red pattern, fully covered with short pubescence and with black suture (Nedvěd and Djurić 2022). From similar *Novius cruentatus* (Mulsant, 1850) differs by prosternal process that is as long as wide, with two carinae, fully black elytral suture and bifurcated claws with two long tips (Nedvěd 2015).

Novius cardinalis is host-specific predatory beetle and one of the best-known biological control agents. The species originates from Australia and was introduced to many countries as a biological control agent that feeds on scales of the genus *Icerya* (Šlipiński 2007, Šlipiński et al. 2020). Today it is distributed almost worldwide. It is the first species of coccinellid to be introduced into Europe (Roy and Migeon 2010). As it is adapted to warmer climate, in Europe is mostly present in warmer areas along the Mediterranean coast (Nedvěd and Djurić 2022). The first recorded introduction to the region was in Montenegro (Herceg Novi) in 1912, and soon after to Croatia (Vis Island and other places in Dalmatia) (Novak 1952), while in Slovenia the first specimens were found as late as in 2007 (Vrezec et al. 2012).

The discovery of these two species in Bosnia and Herzegovina is not unexpected, particularly in the Mediterranean region of the country. Nevertheless, it is significant



Figure 3. *Novius cardinalis* (Mulsant, 1850) from Neum collected on 19 October 2021 (photo: D.Kulijer).

Slika 3. *Novius cardinalis* (Mulsant, 1850) najdena v Neumu dne 19.10.2021 (foto: D.Kulijer).

as it contributes the knowledge of these species distribution in Europe and fulfill the gap of their presence along the Mediterranean coast. In the western part of Balkan Peninsula both species are known only from Croatia and Albania (Kovar 2007, Canepari 2013).

Considering the low number of available records and only few published papers it is expected that more species will be discovered in Bosnia and Herzegovina. This paper is one additional step towards the first checklist of Coccinellidae of the country.

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