

ON THE DISTRIBUTION OF THE LATTICE BROWN, *KIRINIA ROXELANA* (CRAMER, 1777) IN SOUTHERN CROATIA (LEPIDOPTERA: NYMPHALIDAE)

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Abstract

New observations of lattice brown, *Kirinia roxelana* (Cramer, 1777) in southern Croatia are presented. The species has been recorded at 11 new localities across the mainland part of Dubrovnik-Neretva County. As the species inhabits mostly rural areas, more targeted surveys in such habitats are needed to provide additional records. The specificity of this habitat is also the main reason why the species has so rarely been observed in Croatia. New records represent an important addition to the knowledge of the distribution of this species and illustrate the lack of faunistic research in the region.

KEY WORDS: butterflies, fauna, Satyrinae, new records

Introduction

The lattice brown, *Kirinia roxelana* (Cramer, 1777), is a Euro-Oriental species distributed from SE Europe across Turkey, Cyprus, Israel, Lebanon, Syria, Iraq and Iran (Tolman & Lewington, 2008; Tshikolovets, 2011). The southern coastal parts of Croatia and Bosnia & Herzegovina represent the western limits of its

distribution on the Balkan Peninsula, and only in the last decade has the extent of its occurrence in the region been explored (Koren, 2015). Unlike most of other Nymphalidae species, *K. roxelana* predominantly inhabits villages and nearby deciduous forests, usually resting on tree trunks or in bushes. For this reason, it is necessary to conduct targeted surveys in rural areas in order to observe this species, especially at the edge of its areal. The goal of this paper was to present new records, including the flight period and habitats of *K. roxelana* in southern Croatia.

Materials and Methods

Specimens of *K. roxelana* were collected with butterfly nets in Dubrovnik-Neretva County, southern Croatia, from 2016 to 2018, during a wider and more detailed survey of the butterfly fauna of the region. In addition to semi-natural habitats, surveys of rural areas were done specifically to search for the studied species. Special attention was given to large mulberry and fig trees in the villages, as our observations suggested that *K. roxelana* often rests on them.

Results

During our survey, we recorded *K. roxelana* at 11 new localities in the county (Fig. 1), both north and south of the Neretva River. The observed flight period was from 5th June until 25th August. The records fall into 11 10x10-km EEA squares, and show that the species is present throughout the mainland part of Dubrovnik-Neretva County.

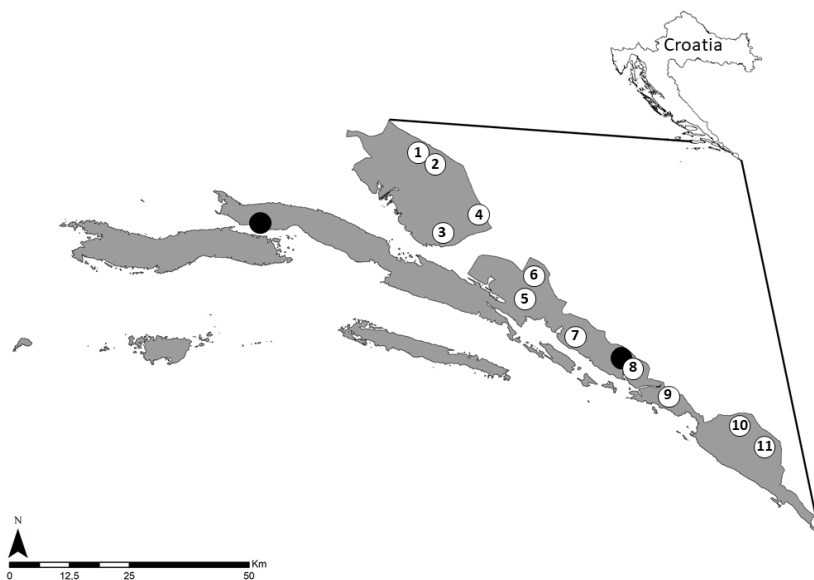


Figure 1. Topographic map showing the sites of observations of *Kirinia roxelana* (Cramer, 1777) in Croatia between 2016 and 2018. State borders are given as broken lines. Numbers indicate the localities and correspond to the list presented in the Results section. Black dots represent the literature records of Werner, 1895 and Koren, 2015.

So far, we have recorded this species only in sub-Mediterranean deciduous forests (*Quercus-Carpinetum orientalis*), up to an altitude of 500 m a.s.l., but not in the Mediterranean evergreen forest zone (*Orno-Quercetum ilicis*). It was also recorded on Mt. Snježnica in the villages Duba Konavoska and Dubravka.

A list of the localities containing the relevant toponyms, a short description of the habitat, altitude, coordinates, dates of visits and observers, is given below. Localities are arranged in geographical order from northwest towards southeast (Fig. 1). Abbreviations of observers: BI = Bariša Ilić; DD = Dubravko Dender; MM = Matea Martinović; TK = Toni Koren. All elevations are given in meters above sea level.

1. Vid, Dragovija village, 43,104028°N, 17,582892°E, 242 m, 05.06.2018, *Quercus pubescens* grove, 1 adult, BI.
2. Vid, Ograđ settlement, 43,088229°N, 17,605371°E, 211 m, 09.06.2018, deciduous forest grove, 1 adult, BI.
3. Badžula settlement, shores of Lake Kutl, 42,957208°N, 17,611835°E; 9 m, 07.07.2016, deciduous forest grove, 1 adult, TK, AS.
4. Dobranje village, 42,984032°N, 17,696829°E, 195 m, 27.06.2016, surroundings of mulberry trees and other deciduous trees in the village, 20 adults, TK.
5. Lisac village, 42,845678°N, 17,816484°E; 215 m, 25.07.2017, *Quercus pubescens* grove, 1 adult, TK.
6. Trnovica village, 42,888555°N, 17,837481°E, 313 m, 06.06.2018, mulberry, figs and other deciduous trees in the village, 5 adults, TK, MM, 25.08.2018, 4 adults, MM.
7. Majkovi, 42,756972°N, 17,918667°E, 387 m, 30.06.2018, deciduous forest grove, 1 adult, TK.
8. Osojnik, Violači settlement, 42,712445°N, 18,067954°E, 358 m, 08.06.2018, deciduous forest grove, 2 adults, TK.
9. Brgat Gornji, Onofri's Spring, 42,651417°N, 18,165000°E, 160 m, 01.07.2018, trees around the parking yard, 2 adults, TK, MM, DD.
10. Duba Konavoska, 42,599700°N, 18,339585°E, 469 m, 10.06.2018, deciduous forest grove, 2 adults, TK, MM, DD.
11. Dubravka, Kovačevići village, 42,533369°N, 18,422312°E, 462 m, 09.06.2018, *Quercus pubescens* grove, 5 adults, TK, DD.

During our survey, we observed a total of 45 specimens of *K. roxelana*. In the village Dobranje, the maximum of 20 individuals was observed, which was overall the most numerous observations. In all other localities, only single or a few specimens were seen, mostly in the villages. The same habitat was usually also utilized by *Hipparchia statilinus*, *H. syriaca* and *H. semele*, which hindered the detection of *K. roxelana*. Sometimes among several dozen specimens of *Hipparchia* spp. only a single *K. roxelana* was observed, which should be taken into consideration in future surveys of this species in the region.

Discussion

Our new observations contribute to the knowledge of the distribution of *K. roxelana* in Croatia and fill the gap between southern Herzegovina (Zekić & Lelo, 2012) and the recent record from Osojnik (Koren, 2015). The current known and published records from the northern part of the Balkan Peninsula show a scattered distribution that could be the result of the lack of systematic surveys in most of the countries. In neighboring Bosnia & Herzegovina, only a few recent records exist (Zekić & Lelo, 2012). In Montenegro, the occurrence is based mostly on old literature records (Carnelutti & Michieli, 1958; Sijarić & Mihljević, 1972; Bretherton, 1973; Sijarić, 1991, Franeta, 2018). Despite the limited number of records, the current distribution of *K. roxelana* in Croatia shows the potential natural boundaries of the species on the northwestern edge of its distribution. It is necessary to perform additional surveys in the northwestern part of Dubrovnik-Neretva County, especially the Pelješac Peninsula, as well as parts of Split-Dalmatia County, to better assess the occurrence of this species in Croatia. Whether its range further southwards and eastwards is contiguous with the known localities in Montenegro and Serbia remains to be seen.

In general, we can conclude that *K. roxelana* is more widespread in the area than was previously known, and thus we could consider the species to be overlooked rather than rare in the region. However, it would be necessary to assess the population trends and dynamics of selected populations of *K. roxelana* in Croatia in order to gain an insight into its possible threats and conservation status.

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О РАСПРОСТРАЊЕНОСТИ КИРИНИЈЕ, *KIRINIA ROXELANA* (CRAMER, 1777) У ЈУЖНОЈ ХРВАТСКОЈ (LEPIDOPTERA: NYMPHALIDAE)

ТОНИ КОРЕН, ДУБРАВКО ДЕНДЕР, БАРИША ИЛИЋ И МАТЕА МАРТИНОВИЋ

Извод

У овом раду су представљени нови налази кириније, *Kirinia roxelana* (Cramer, 1777), на подручју јужне Хрватске. Врсту смо забележили на 11 нових локалитета дуж копненог дела Дубровачко-неретванске жупаније. Будући да је врста везана за руралне области, потребна су циљана истраживања како би се потврдило њено присуство у суседним подручјима. Специфични захтеви по питању станишта и повезаност са људским насељима је могућ разлог недостатка ранијих налаза ове врсте. Наши налази представљају важан додатак познавању распрострањености кириније и указују на недостатак фаунистичких истраживања јужне Хрватске.

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