

NEW DATA ABOUT BUTTERFLIES AND MOTHS (Insecta: Lepidoptera) OF KORNATI ISLANDS, CROATIA

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Accepted: December 15th 2010

In this paper the data about 45 species of butterflies and moths found on Kornati Islands during April, May and September 2009 are presented. All of the already known five butterfly species that were recorded in the past on Kornati were found during this research. In addition to those already known, 18 butterfly and 22 moth species are first records for the Kornati Islands. These results are preliminary and further studies regarding both butterfly and moth fauna of Kornati Islands still need to be done.

Kornati islands, butterflies, moths

T. KOREN i M. BJELIĆ: Novi podatci o fauni danjih i noćnih leptira Kornatskog otočja, Hrvatska. Entomol. Croat. 2010., Vol. 14., Num. 3-4: 45-52.

Ovaj rad donosi podatke o 45 vrsta danjih i noćnih leptira pronađenih na Kornatskom otočju u travnju, svibnju i rujnu 2009. godine. Svih 5 vrsta leptira koje su u prošlosti pronađene na Kornatima zabilježene su tijekom ovog istraživanja. Osim njih, zabilježeno je i ukupno 18 vrsta danjih i 22 vrste noćnih leptira po prvi puta za Kornatsko otočje. Ovi su rezultati tek preliminarni te su potrebna daljnja istraživanja danjih i noćnih leptira Kornata.

Kornatsko otočje, danji leptiri, noćni leptiri

Introduction

Kornati Islands form a separate group of islands situated in the middle part of Croatian territorial waters. Although the total area of the islands covers

around 320 km² and includes around 150 islands, islets and reefs, the Kornati National Park includes around 89 islands and islets which make in total around 218 km². The islands of Kornati were declared a national park in 1980 due to their high diversity of coastline, interesting geomorphological characteristics and extremely rich biocoenoses of marine ecosystems (www.kornati.hr). Kornati Islands are made of carbonate rocks which are of Cretaceous and Paleogene origin (Mamužić, 1959). According to Köppen's climate classification (Köppen, 1900), the climate of the islands belongs to the type Cs'a, which refers to a temperate climate with drought during the summer period. Vegetation is mostly shaped by the mechanical forces of the wind and by grazing. Most of the islands are characterized by rocky pastures and olive trees while fertile and arable grounds can be found only sporadically – some of them can be found on the island of Kornat, (Tarac polje) and, Poje, on the island of Lavsa (Pandža & Stančić, 2004). The Kornati Islands lack natural sources of water which can be retained only on the rarely found thicker layers of red soil (Mamužić, 1959). Due to karstic surfaces and lack of water, vegetation cover is mostly poor (Mamužić, 1959). Only two published papers about the butterflies of Kornati exist, with only few observed species (Hafner, 1930; Withrington & Verovnik, 2008). So it can be concluded that the lepidopteran fauna of the Kornati Islands is almost completely unknown.

The aim of this research was to give the first preliminary data about the butterflies and moths of Kornati Islands.

Materials and Methods

This research was conducted during 2009 on four islands: Kornat, Lavsa, Mana and Žut (Fig. 1). Kornat was visited in April, May and September, Žut in May and September, while Lavsa and Mana were visited only once, in September. Only the locations around ship docks and shores were researched, due to the limited time spent on each island. The main research site on Kornat was a small settlement, Vrulje (southwestern part of Kornat); the research on Žut was mainly conducted on different locations surrounding Pristanišće (southeastern part of the island). Mana and Lavsa were visited only once and the research on these two islands took place around the ship docks as well. On Žut specimens were collected either by using a 40 W light trap or by sweep nets, while on the other

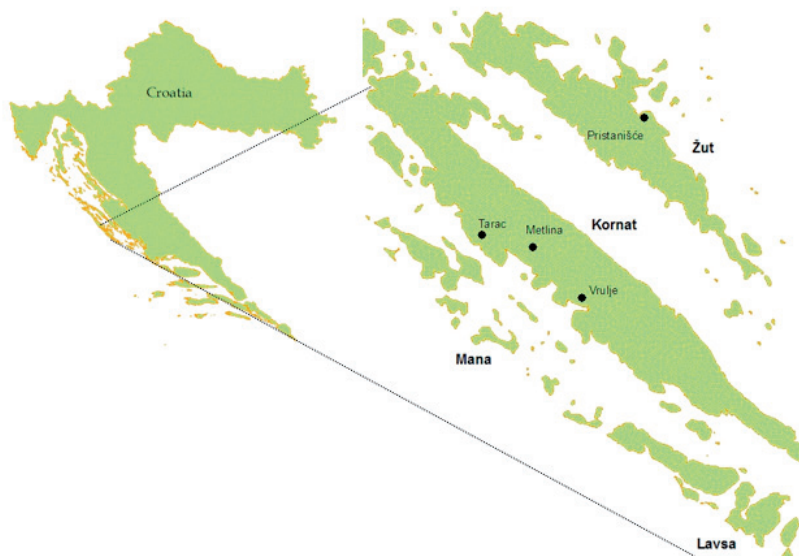


Figure 1. Map of locations on the islands of Žut, Kornat, Lavsa and Mana investigated.

Slika 1. Prikaz istraživanih lokaliteta na otocima Žut, Kornat, Lavsa i Mana.

islands butterflies were caught by sweep nets or were identified by observation. Only few species were identified by their caterpillars.

Systematics follows Karsholt & Razowski (1996) and species identification was done using Leraut (2006, 2009), Macek (2008) and Tolman & Lewington (2008).

Results and Discussion

The first research on Kornati was done by Hafner (1930) who recorded only two butterfly species, *Iphiclides podalirius* (Linnaeus, 1758) and *Coenonympha pamphilus* (Linnaeus, 1758). Withrington & Verovnik (2008) added three new species for Kornat: *Hypparchia statilinus* (Hufnagel, 1766), *Hypparchia syriaca* (Staudinger, 1871) and *Lasiommata maera* (Linnaeus, 1758). There are no published papers about moths on Kornati Islands.

As a result of this short survey, a total of 45 species were recorded, comprising

23 butterfly and 22 moth species. The list of recorded species is given in Tab. 1. The greatest number of species was recorded on Žut (35), followed by Kornat (19), Mana (6) and Lavsa (5). All of the previously identified butterfly species on Kornat were confirmed (Hafner, 1930; Withrington & Verovnik, 2008) and 18 new species were added for the fauna of island (Tab. 1). All butterfly species recorded on Žut, Lavsa and Mana are new for these islands because no research into the butterfly fauna of these islands had been conducted before. Interesting is the finding of *Argynnis paphia* (Linnaeus, 1758) on Kornat and Žut, because this is the southernmost finding site of this species on the Adriatic islands, after Dugi Otok (Withrington & Verovnik, 2008).

A total of 22 moth species were recorded, 3 of them on Kornat and 19 on Žut, all new for those islands. The greatest number of found species belong to the family Geometridae (7), followed by Noctuidae (5), Arctiidae (5), Cossidae (2), Lasiocampidae (1), Sphingidae (1) and Notodontidae (1).

Even though the number of species found is relatively low in comparison with some other systematically researched islands like Krk (Habeler, 2003), this research gives new data about the butterflies and moths on Kornat and the first ever data about the butterflies and moths on the islands of Žut, Mana and Lavsa.

Table 1. Systematic list of recorded butterfly and moth species along with their presence at the research localities.

Tablica 1. Sistematski popis vrsta danjih i noćnih leptira na istraživanim lokalitetima.

Species	Žut		Kornat		Mana	Lavsa
	Pristanišće	Vrulje	Tarac polje	Metlina		
Cossidae						
1. <i>Cossus cossus</i> (Linnaeus 1758) *		•				
2. <i>Dyspepla ulula</i> (Borkhausen 1790) *	•					
Lasiocampidae						
3. <i>Dendrolimus pini</i> (Linnaeus 1758) *	•					
Sphingidae						
4. <i>Macroglossum stellatarum</i> (Linnaeus, 1758) *	•	•	•			
Papilionidae						
5. <i>Iphiclides podalirius</i> (Linnaeus, 1758)	•	•				

Table 1. Continued

Tablica 1. Nastavak

Pieridae						
6.	<i>Pieris brassicae</i> (Linnaeus, 1758) *		•	•		
7.	<i>Pieris rapae</i> (Linnaeus, 1758) *	•	•	•		
8.	<i>Pontia edusa</i> (Fabricius, 1777) *		•	•		
9.	<i>Colias croceus</i> (Fourcroy, 1785) *	•	•	•	•	•
10.	<i>Colias alfacarensis</i> Ribbe, 1905 *		•		•	
Lycenidae						
11.	<i>Callophrys rubi</i> (Linnaeus, 1758) *	•				
12.	<i>Glaucoopsyche alexis</i> (Poda, 1761) *	•				
13.	<i>Aricia agestis</i> (Denis & Schiffermüller, 1775) *	•				
14.	<i>Polyommatus icarus</i> (Rottemburg, 1775) *		•			
Nymphalidae						
15.	<i>Argynnis paphia</i> (Linnaeus, 1758) *	•			•	
16.	<i>Argynnis pandora</i> (Denis & Schiffermüller, 1775) *			•	•	
17.	<i>Issoria lathonia</i> (Denis & Schiffermüller, 1775) *	•		•		
18.	<i>Vanessa atalanta</i> (Linnaeus, 1758) *	•	•	•	•	•
19.	<i>Vanessa cardui</i> (Linnaeus, 1758) *	•	•	•	•	•
20.	<i>Polygonia egea</i> (Cramer, 1775) *		•			
21.	<i>Limenitis reducta</i> Staudinger, 1901*	•				
22.	<i>Lasiommata megera</i> (Linnaeus, 1767) *	•	•	•	•	•
23.	<i>Lasiommata maera</i> (Linnaeus, 1758)	•	•			•
24.	<i>Coenonympha pamphilus</i> (Linnaeus, 1758)	•	•	•		•
25.	<i>Hypparchia syriaca</i> (Staudinger, 1871)	•	•	•		
26.	<i>Hypparchia semele</i> (Linnaeus, 1758) *		•	•		•
27.	<i>Hypparchia statilinus</i> (Hufnagel, 1766)	•	•			

Table 1. Continued
 Tablica 1. Nastavak

Geometridae		
28.	<i>Peribatodes umbraria</i> (Hübner, 1799) *	•
29.	<i>Gerinia honoraria</i> (Denis & Schiffermüller, 1775) *	•
30.	<i>Odontognophos sartata</i> (Treitschke, 1827) *	•
31.	<i>Dyscia raunaria</i> (Freyer 1852) *	•
32.	<i>Xenochlorodes olympiaria</i> (Herrich-Schaffer 1852) *	•
33.	<i>Idaea degeneraria</i> (Hübner, 1799) *	•
34.	<i>Rhodostrophia calabra</i> (Petagna, 1786) *	•
Notodontidae		
35.	<i>Harpyia milhauseri</i> (Fabricius 1775) *	•
Noctuidae		
36.	<i>Eutelia adulatatrix</i> (Hübner, 1813) *	•
37.	<i>Autographa gamma</i> (Linnaeus 1758) *	•
38.	<i>Hoplodrina blanda</i> (Denis & Schiffermüller 1775) *	•
39.	<i>Mythimna sicula</i> (Treitschke 1835) *	•
40.	<i>Noctua pronuba</i> (Linnaeus, 1758) *	•
Arctiidae		
41.	<i>Eilema depressa</i> (Esper, 1787) *	•
42.	<i>Eilema caniola</i> (Hubner 1808) *	•
43.	<i>Arctia villica</i> (Linnaeus, 1758) *	•
44.	<i>Cymbalophora pudica</i> (Esper 1785) *	•
45.	<i>Tyria jacobaeae</i> (Linnaeus 1758)*	•

*species recorded for the first time on the Kornati Islands

Acknowledgments

The first part of this research was done during participation in a field trip organized by the Croatian Herpetological Society – HYLA and the second part was done during a field trip organized by the Biology Students' Organization – BIUS. We would like to thank both organization committees for giving us the opportunity to start and finish this research and to all other members of both organizations for their help and support during the research. We would also like to thank Martina Šašić, MSc, and Iva Mihoci, BSc, from the Croatian Natural History Museum, for their help with species identification.

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