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THE BUTTERFLIES OF MOUNTAINS OF THE VALJEVO REGION (LEPIDOPTERA: HESPERIOIDEA AND PAPILIONOIDEA)

M. ĐURIĆ

Bul. Oslobođenja 106, 11000 Beograd, Serbia
E–mail: djuricm@ikomline.net

The entomofaunas of Povlen, Maljen, and Suvobor, mountains in the Valjevo region (West–Central Serbia), so far have not been thoroughly studied. Only two sources provide data on butterfly species present in the area: JAKŠIĆ (1988) and NEDELJKOVIĆ (1994). Besides being outdated, these sources combined give us a list of only 105 species recorded. Presented here are records obtained through field research and from various sources over recent years. Updating our knowledge on the butterfly fauna of the area, they add 24 new species to the list. It should be noted that this figure certainly is not final. Numerous undegraded habitats hold the promise that even greater variety will be found in the area.

KEY WORDS: butterflies, Povlen, Maljen, Suvobor

INTRODUCTION

Mountains of the Valjevo region, e.g., Povlen, Maljen, and Suvobor, situated south of the town of Valjevo, are an area where butterflies have not been studied much, and data on their entomofaunas are scarce. Only occasional records were given for the distribution of butterfly species in "Provisional Distributional Maps of Yugoslavia" (JAKŠIĆ, 1988). In 1994, a paper entitled "Distribution Maps of Butterflies in the Ljubovija and Valjevo Area" (NEDELJKOVIĆ, 1994) gave a new contribution to the knowledge of the butterfly species present in the area. No

significant work followed, so this paper represents the first attempt at systematic analysis.

The author studied the area on several occasions, but to achieve a comprehensive overview he also consulted data obtained by Ivan DODOK, Aleksandra GROZDANOVIĆ, Aleksa TOMIĆ, and Milan JOVANOVIĆ, as well as records from the two already mentioned sources.

The purpose of the field research was to establish the condition of habitats and determine the butterfly species present in the area.

Explored region

The region discussed here is situated in the north–central part of Western Serbia, to the south of Valjevo. This hilly area is dominated by three mountains increasing in height from east to west (Suvobor, 864 m; Maljen, 1104 m; and Povlen, 1347 m). It is interesting to note that Povlen is the highest mountain in the area, with no higher mountains in Serbia anywhere to the north.

The map in Fig. 1 gives the position of certain localities in the region.

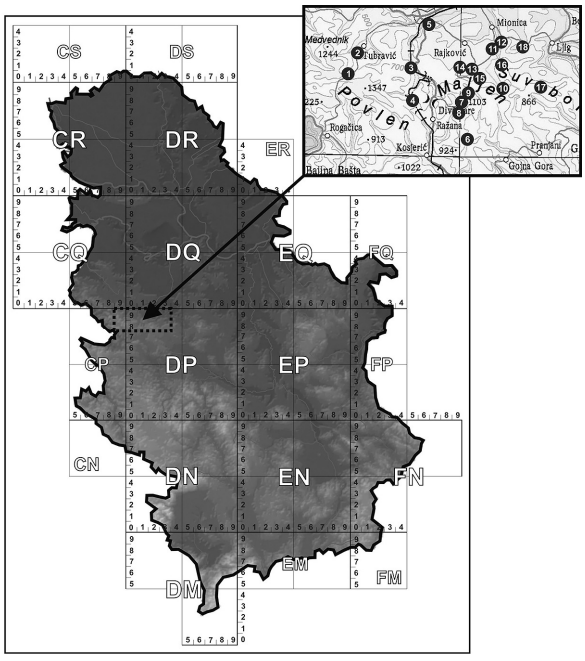

Figure 1. Position of certain localities in the region.

MATERIAL AND METHODS

The author studied the area on several occasions in the last few years, consulting the data from other investigators wherever possible (but to achieve comprehensive overview also compiled data obtained by Ivan DODOK, Aleksandra GROZDANOVIĆ, Aleksa TOMIĆ, Milan JOVANOVIĆ, as well as from two already mentioned sources).

A special effort was made to include different parts of growing season. Exact locations and altitudes (Tab. I) were recorded using a GPS device, and detailed maps were used when such a device was not available.

Table I

Review of explored localities in the Valjevo region.

Loc. No	Locality name	UTM designation	Altitude	Date(s) visited
1	Debelo brdo	CP98	1050 m	30.06.2006, 30.07.2007.
2	Poćuta	CP99	320 m	02.07.2006.
3	Gradac (Suvaja)	DP18	380 m	23.05.2006, 25.07.2006, 10.09.2007.
4	Kaona (Bukovi)	DP18	750 m	23.05.2006, 25.07.2006.
5	Gradac	DP19	150 m	23.05.2006.
6	Tometino Polje	DP27	650 m	24.07.2006, 26.07.2006, 10.09.2007.
7	Divčibare	DP28	1000 m	12.07.2003, 22.05.2005, 25.06.2005, 24.05.2006, 23.07.2006, 25.07.2006, 28.04.2007, 22.07.2007, 10.09.2007.
8	Rastovac	DP28	850 m	26.07.2006, 27.07.2006.
9	Orlovac	DP28	610 m	29.04.2007.
10	Jankovići	DP28	530 m	29.04.2007.
11	Tolić	DP29	330 m	25.06.2005.
12	Ribnica	DP29	220 m	22.07.2007.
13	Brežđe	DP29	330 m	24.05.2006, 29.04.2007.
14	Bulići	DP29	480 m	28.04.2007.
15	Donji Kovačevići	DP29	460 m	29.04.2007.
16	Struganik	DP29	350 m	29.04.2007.
17	Rajac	DP38	780 m	06.07.2002.
18	Vrujci	DP39	350 m	27.07.2005.

Butterflies were observed and digitally photographed. All data were written down in a field diary and later entered into a computer database. In the few cases where determination was difficult, specimens were caught with an entomological net and given to Dr. Predrag Jakšić, who analyzed genitalia using well–known and widely accepted methods.

Taxonomy and nomenclature follow "The Lepidoptera of Europe" (KARSHOLT & RAZOWSKI, 1996).

RESULTS AND DISCUSSION

Review of recorded species by UTM fields is presented in the following manner – records before the year of 2000 are given in brackets while information about each of the 24 new species added to the list for the region include data on exact locality and the year of finding. New butterfly species for the mountains of the Valjevo region are marked with an asterisk sign (*).

Erynnis tages (Linnaeus, 1758)	DP09, CP88, DP18, (DP19), DP27, DP28, DP39
Carcharodus alceae (Esper, 1783)	DP09, CP88, DP18
C. lavatherae (Esper, 1783)	DP09, (DP18)
Spialia orbifer * (Hübner, 1823)	DP18, DP28, DP29 – recorded at localities 5, 7, and 13 in 2006
Pyrgus carthami * (Hübner, 1813)	DP28 – recorded at locality 7 in 2006
P. malvae (Linnaeus, 1758)	CP88, DP18, (DP19), DP28, DP29, DP39
P. armoricanus (Oberthur, 1910)	(DP19), (DP39)
P. alveus (Hübner, 1803)	CP98, (CP88), DP28
Carterocephalus palaemon (Pallas, 1771)	(DP09)
Thymelicus lineola (Ochsenheimer, 1808)	DP09, DP18, (DP19), DP28, (DP39)
T. sylvestris (Poda, 1761)	DP09, DP28
T. acteon * (Rottemburg, 1775)	DP09 – recorded at the Gradac railway station in 2007 (*leg.* Dodok – pers. comm.)
Hesperia comma (Linnaeus, 1758)	(CP88), (DP29), (DP38), (DP39)
Ochlodes venata (Bremer & Grey, 1853)	CP98, CP99, (DP08), DP09, (CP88), DP18, DP19, DP28, DP29
Zerynthia polyxena (Denis & Schiffermüller, 1775)	CP88, DP19
Parnassius mnemosyne (Linnaeus, 1758)	CP98, (DP09), DP18
P. apollo (Linnaeus, 1758)	(CP98), (CP99), DP08, (DP09), (CP88), (DP18)
Iphiclides podalirius (Linnaeus, 1758)	(DP08), DP09, CP88, DP18, DP19, DP28, DP29, DP38, DP39

Papilio machaon (Linnaeus, 1758)	CP98, (CP99), DP08, DP09, CP88, DP18, (DP19), DP28, DP29, DP38
Leptidea sinapis (Linnaeus, 1758)	CP98, CP99, DP09, CP88, DP18, DP19, DP27, DP28, DP29, (DP38), DP39
Anthocharis cardamines (Linnaeus, 1758)	DP09, CP88, DP18, DP19, DP28, DP29
Aporia crataegi (Linnaeus, 1758)	DP08, DP09, CP88, (DP19)
Pieris brassicae (Linnaeus, 1758)	DP09, CP88, (DP19), DP28, DP29
P. mannii (Mayer, 1851)	DP09, (DP29), (DP38)
P. rapae (Linnaeus, 1758)	CP99, DP08, DP09, CP88, DP18, DP19, DP27, DP28, DP29, (DP38), DP39
P. ergane (Geyer, 1828)	(DP19)
P. napi (Linnaeus, 1758)	(CP98), CP99, DP08, DP09, CP88, DP18, (DP19), DP27, DP28, DP29, DP39
P. balcana * (Lorković, 1970)	DP28 – recorded at locality 7 in 2006
Pontia edusa (Fabricius, 1777)	(DP19), (DP28)
Colias croceus (Fourcroy, 1785)	CP98, DP08, DP09, DP18, DP19, DP27, DP28, DP29, DP39
C. myrmidone (Esper, 1780)	(CP98), (CP99), DP09, (CP88), (DP19)
C. hyale (Linnaeus, 1758)	DP08, DP19, DP28, (DP29), (DP38)
C. alfacariensis * (Ribbe, 1905)	CP88, DP18, DP28, DP29 – recorded at localities 3, 7, and 14 in 2007
Gonepteryx rhamni (Linnaeus, 1758)	CP98, DP08, DP09, CP88, (DP19), DP27, DP28, DP38
Hamearis lucina (Linnaeus, 1758)	(CP98), (DP09), CP88, DP18, (DP19), DP29, DP39
Lycaena phlaeas (Linnaeus, 1761)	DP09, (DP19), DP27, DP28
L. dispar (Haworth, 1802)	(DP19)
L. virgaureae (Linnaeus, 1758)	(DP08), (DP09), (DP19), DP28, (DP39)
L. tityrus (Poda, 1761)	DP09, DP18, DP19, DP27, DP28, DP29, DP39
L. alciphron (Rottemburg, 1775)	CP98, DP28, (DP38), (DP39)
L. hippothoe * (Linnaeus, 1761)	DP28 – recorded at locality 7 in 2006
Thecla betulae (Linnaeus, 1758)	(DP09), DP29
Neozephyrus quercus (Linnaeus, 1758)	DP09, (DP19), DP29
Callophrys rubi * (Linnaeus, 1758)	CP88, DP19, DP28, DP29 – recorded at localities 5 and 13 in 2006 and localities 7, 14 and 16 in 2007
Satyrium w–album (Knoch, 1782)	(CP88)
S. pruni (Linnaeus, 1758)	(DP09), (CP88)
S. spini (Denis & Schiffermüller, 1775)	(CP98), (CP99), (DP08), DP09, (CP88), (DP19)
S. ilicis (Esper, 1779)	DP09, (DP19)
S. acaciae * (Fabricius, 1788)	DP09 – recorded at the Gradac railway station in 2007 (*leg.* Dodok – pers. comm.)

Cupido minimus (Fuessly, 1775)	DP09, (DP19), DP28, DP29, (DP38), (DP39)
C. osiris * (Meigen, 1829)	DP28 – recorded at locality 8 in 2006
C. argiades (Pallas, 1771)	DP09, CP88, DP18, (DP19), DP28, DP29, (DP38), DP39
C. decolorata (Staudinger, 1886)	DP09, (DP19)
C. alcetas * (Hoffmannsegg, 1804)	DP27 – recorded at locality 6 in 2006
Celastrina argiolus (Linnaeus, 1758)	DP09, CP88, DP18, DP27, DP28, (DP39)
Pseudophilotes vicrama * (Hemming, 1929)	DP29 – recorded at locality Ribnica in 2006 (photographed by Tomić, *det.* M. Đurić)
Scolitantides orion (Pallas, 1771)	(DP08), DP09, CP88, DP18, DP27, DP29, (DP39)
Glaucopsyche alexis * (Poda, 1761)	DP18, DP28, DP29 – recorded at localities 3 and 13 in 2006 and locality 10 in 2007
Iolana iolas (Ochsenheimer, 1816)	(DP09)
Maculinea arion (Linnaeus, 1758)	(DP08), DP09, (DP19), DP28
Plebejus argus (Linnaeus, 1758)	CP98, (DP08), DP09, DP18, (DP19), DP27, DP28, DP29
P. idas (Linnaeus, 1761)	CP98, DP09, DP18, DP19, DP27, DP28
Aricia agestis (Denis & Schiffermüller, 1775)	DP09, DP18, DP28, (DP39)
A. artaxerxes * (Fabricius, 1793)	CP98, DP27, DP28 – recorded at localities 1, 6, 7 and 8 in 2006
Polyommatus semiargus * (Rottemburg, 1775)	CP98, DP28 – recorded at locality 7 in 2005 and locality 1 in 2006
P. dorylas * (Denis & Schiffermüller, 1775)	DP28 – recorded at locality 7 in 2006
P. amandus (Schneider, 1792)	CP98, (DP08), DP27, DP28
P. icarus (Rottemburg, 1775)	CP98, CP99, DP09, (CP88), DP18, DP19, DP27, DP28, DP29, DP39
P. daphnis (Denis & Schiffermüller, 1775)	DP09, (DP38), (DP39)
P. bellargus (Rottemburg, 1775)	DP18, DP27, DP28, (DP39)
P. coridon (Poda, 1761)	(CP98), (CP99), (DP08), DP09, (CP88), DP18, (DP19), DP27, DP28, (DP29), (DP38), (DP39)
P. admetus (Esper, 1783)	(DP38)
Argynnis paphia (Linnaeus, 1758)	(CP98), DP08, (DP09), (CP88), DP18, DP19, DP27, DP28, DP29, (DP38), (DP39)
A. pandora (Denis & Schiffermüller, 1775)	(CP98), (DP08), CP88
A. aglaja (Linnaeus, 1758)	CP98, CP99, DP08, (DP09), (CP88), DP18, (DP19), DP27, DP28, (DP29), (DP38), (DP39)
A. adippe (Denis & Schiffermüller, 1775)	CP98, CP99, DP08, (CP88), DP28, DP38

A. niobe (Linnaeus, 1758)	CP98, DP28, (DP29), (DP38), (DP39)
Issoria lathonia (Linnaeus, 1758)	CP98, DP08, CP88, DP18, (DP19), DP27, DP28, DP29, (DP38), (DP39)
Brenthis daphne (Denis & Schiffermüller, 1775)	CP98, CP99, DP08, (DP09), DP18, (DP19), DP27, DP28, DP39
B. hecate (Denis & Schiffermüller, 1775)	CP98, CP99, (DP19), DP27, DP28, (DP38), (DP39)
Boloria euphrosyne * (Linnaeus, 1758)	DP28 – recorded at locality 7 in 2005
B. dia (Linnaeus, 1767)	(CP88), DP29, (DP39)
Vanessa atalanta (Linnaeus, 1758)	CP98, CP99, DP08, (DP09), CP88, DP18, (DP19), DP27, DP28, (DP38), DP39
V. cardui (Linnaeus, 1758)	CP98, CP99, DP08, (CP88), DP18, DP19, DP28, (DP39)
Inachis io (Linnaeus, 1758)	CP98, CP99, DP08, (DP09), CP88, DP18, DP19, DP28, DP38, (DP39)
Aglais urticae (Linnaeus, 1758)	CP98, (DP09), (DP18), (DP19), DP28, (DP38), (DP39)
Polygonia c–album (Linnaeus, 1758)	CP98, DP08, (DP09), CP88, DP19, DP27, DP28, DP29
Araschnia levana (Linnaeus, 1758)	CP99, DP08, (DP09), CP88, DP18, DP19, DP27, DP28, DP29, (DP39)
Nymphalis antiopa (Linnaeus, 1758)	CP88, (DP19)
N. polychloros (Linnaeus, 1758)	(CP98), DP08, CP88, (DP19), DP28
Euphydryas maturna * (Linnaeus, 1758)	CP98 – recorded at locality 1 in 2006
E. aurinia * (Rottemburg, 1775)	CP98, DP28 – recorded at locality 7 in 2005 and locality 1 in 2006
Melitaea cinxia * (Linnaeus, 1758)	CP98, DP28 – recorded at locality 7 in 2005 and locality 1 in 2006
M. phoebe (Denis & Schiffermüller, 1775)	(DP19), DP29
M. trivia (Denis & Schiffermüller, 1775)	(DP08), (DP09), (DP18), (DP28)
M. didyma (Esper, 1778)	DP08, (DP19), DP27, DP28, (DP39)
M. diamina * (Lang, 1789)	CP98, DP28 – recorded at locality 7 in 2005 and locality 1 in 2006
M. aurelia Nickerl, 1850	CP98, (DP08), (CP88)
M. athalia (Rottemburg, 1775)	CP98, DP08, (DP09), (CP88), DP18, DP19, DP27, DP28, DP29
Limenitis camilla (Linnaeus,1764)	(DP19)
L. reducta Staudinger, 1901	(DP09), (DP19), DP29
Neptis sappho (Pallas, 1771)	DP08, (DP09), CP88, DP18, DP19, DP27, DP28, DP29, DP39
N. rivularis (Scopoli, 1763)	(CP98), (CP99), (DP38)

Apatura ilia (Denis & Schiffermüller, 1775)	DP08, (DP09), DP18, (DP19), DP29, (DP39)
A. iris (Linnaeus, 1758)	CP99, (DP09), DP18, (DP19)
Kirinia roxelana (Cramer, 1777)	(DP19)
Pararge aegeria (Linnaeus, 1758)	(DP09), CP88, DP18, DP19, DP27, DP28, DP29, DP39
Lasiommata megera (Linnaeus, 1767)	(DP09), (CP88), DP18, (DP19), DP27, DP28, DP29, (DP38)
L. maera (Linnaeus, 1758)	CP98, (DP08), DP09, DP18, DP28, DP29, DP39
Coenonympha arcania (Linnaeus, 1761)	CP98, CP99, DP09, DP18, (DP19), DP28, DP29, (DP38)
C. glycerion * (Borkhausen, 1788)	DP18, DP27, DP28 – recorded at localities 3, 6 and 7 in 2007
C. gardetta * (Prunner, 1798)	DP28 – recorded at locality 7 in 2005
C. pamphilus (Linnaeus, 1758)	CP98, (DP08), DP09, (CP88), DP18, DP19, DP27, DP28, DP29, (DP38), DP39
Pyronia tithonus (Linnaeus, 1767)	(CP88), (DP19), DP29, (DP39)
Aphantopus hyperantus (Linnaeus, 1758)	(CP98), CP99, DP09, (CP88), DP18, (DP19), DP27, DP28, (DP39)
Maniola jurtina (Linnaeus, 1758)	CP98, CP99, DP08, DP09, (CP88), DP18, (DP19), DP27, DP28, DP29, (DP38), DP39
Erebia ligea (Linnaeus, 1758)	(CP98), (DP08), (DP09), (DP18), DP28, (DP29), (DP38)
E. euryale * (Esper, 1805)	DP08, DP27, DP28 – recorded at locality 7 in 2003 and locality 6 in 2006
E. aethiops (Esper, 1777)	CP98), (DP08), (DP09), (CP88), (DP19), (DP29), (DP38), (DP39)
E. medusa * (Denis & Schiffermüller, 1775)	DP08, DP28 – recorded at locality 7 in 2006
Melanargia galathea (Linnaeus, 1758)	CP98, CP99, DP08, DP09, (CP88), DP18, (DP19), DP27, DP28, DP29, (DP38), DP39
Satyrus ferula (Fabricius, 1793)	DP09, DP18, DP27, DP28, (DP39)
Minois dryas (Scopoli, 1763)	(CP98), (DP08), (DP09), (CP88), DP18, (DP19), DP27, DP29, DP39
Hipparchia fagi (Scopoli, 1763)	(DP09), (CP88), DP18, (DP19), DP28, (DP29), (DP38), (DP39)
H. delattini Kudrna, 1975	(DP28), (DP29), (DP38), (DP39)
H. statilinus (Hufnagel, 1766)	(DP29), (DP38)
Arethusana arethusa (Denis & Schiffermüller, 1775)	(DP09), (DP18)
Brintesia circe (Fabricius, 1775)	DP08, DP09, (CP88), (DP19), DP27, DP28, DP38

Chazara briseis (Linnaeus, 1764) (DP08)

Among the 129 species present, all five families of Rhopalocera are represented. The distribution according to families is given in Tab. II (as well as comparison to species number for Serbia).

Among the additions to the species list for the region, certain records require special attention because they change the known distribution of the species in question. Here we should mention the records of Euphydryas maturna (Linnaeus, 1758) on Mt. Povlen and Euphydryas aurinia (Rottemburg, 1775) on both Mt. Povlen and Mt. Maljen.

One important record certainly is the finding of Coenonympha gardetta (Prunner, 1798) on Mt. Maljen. The butterfly shown in Fig. 2 undoubtedly belongs to the subspecies *orientalis* (SIJARIĆ, 1984), confirming that its distribution extends more to the north than was previously known.

Table II

Species according to families.

Family	Species Nos.	Total species	% of species present in Serbia
Hesperiidae	1–14	14	66.7
Papilionidae	15–19	5	83.3
Pieridae	20–34	15	71.4
Lycaenidae	35–72	38	70.4
Nymphalidae	73–129	57	63.3

Figure 2. *Coenonympha gardetta orientalis* on Mt. Maljen.

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ДНЕВНИ ЛЕПТИРИ ВАЉЕВСКИХ ПЛАНИНА (LEPIDOPTERA: HESPERIOIDEA И PAPILIONOIDEA)

МИЛАН ЂУРИЋ

ИЗВОД

Под појмом „Ваљевске планине" подразумевају се три планине јужно од Ваљева - Повлен, Маљен и Сувобор. Најзападнији Повлен (1347 m) је уједно и највиши, до њега је Маљен (1104 m), а најисточнији је Сувобор (864 m).

До сада су се поједини подаци о дневним лептирима тог краја могли наћи само у картама распрострањења (JAKŠIĆ, 1988; NEDELJKOVIĆ, 1994). Комбиновани подаци из та два извора дају укупно 105 врста дневних лептира.

У периоду 2003-2007 неколико пута је посећивано поменуто подручје у различитим периодима године. Проучавано је 18 локалитета. Приложена је и мапа која показује распоред наведених локалитета.

Да би се дала што потпунија слика, коришћени су и подаци са интернет презентације Милана ЈОВАНОВИЋА, фотографије и подаци добијени од Ивана ДОДОКА и Алексе ТОМИЋА.

Списку дневних лептира Ваљевских планина су придодате 24 врсте, тако да је до сада регистровано 129 врста. На истраживаном подручју је, према томе, регистровано 66,7% у Србији познатих врста из фамилије Hesperiidae, 83,3% из фамилије Papilionidae, 71,4% из фамилије Pieridae, 70,4% из фамилије Lycaenidae и 63,3% из фамилије Nymphalidae.

Међу новим налазима се истичу следеће врсте: *Euphydryas maturna* (Linnaeus, 1758), нађена на Повлену; *Euphydryas aurinia* (Rottemburg, 1775), нађена на Повлену и Маљену и *Coenonympha gardetta* (Prunner, 1798), нађена на Маљену. Овај последњи налаз помера северну границу ареала врсте.

Ово истраживање треба схватити као први прилог систематском изучавању дневних лептира у подручју Ваљевских планина. Нема сумње да ће даља истраживања довести до нових отрића и дати потпунију слику.

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