

## CONTRIBUTION TO KNOWLEDGE OF THE PAPILIONIDAE AND PIERIDAE (LEPIDOPTERA) FAUNA OF SOUTHEASTERN SERBIA

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The zoological collection of the Department of Biology and Ecology contains an entomological collection that was formed during faunistic field work with students.

This paper presents the results of analysis of butterflies from the families Papilionidae and Pieridae in the Lepidoptera collection. the collection's entomological material contains 72 specimens of Papilionidae and 236 specimens of Pieridae, including five species of Papilionidae and 13 of Pieridae from 96 localities. New localities for the butterfly species determined in the collection are indicated in the discussion.

KEY WORDS: Papilionidae, Pieridae, Southeast Serbia

### INTRODUCTION

The Department of Biology and Ecology of Niš University's Science Faculty has been in existence since the year 2000. This department has four divisions, namely the Chairs of Zoology, Botany, Biotechnology and Ecology and Environmental Protection. The zoological collection was formed during practical field work with students of biology in previous years. This collection contains an entomological part, which reflects the region's species richness and biodiversity.

Material of the Lepidoptera collection from the families Papilionidae and Pieridae is analyzed in this paper. The material in the collection contains 72 specimens of Papilionidae and 236 specimens of Pieridae from 96 localities. Most of the specimens were collected in Southeast Serbia, but the paper covers all specimens in the collection, including those from localities outside the mentioned area.

Southeast Serbia has a unique geographical position, one where the Rhodopian, Balkan and Carpathian mountain systems meet. It has a variety of geological substrates. The Rhodopian Mountains mostly consist of Paleozoic granite and crystal schists, with eruptive cliffs of varying age. The structure of the Carpatho–Balkan mountain system is mostly made up of Paleozoic cliffs and Permian sandstones (STEVANOVIĆ & STEVANOVIĆ, 1995). The Mesozoic cliffs in the mountains are composed of limestone, dolomite, and conglomerates, while sandstone and clay are the main structural components of the canyons. In many places, there are also volcanic outcrops.

In Southeast Serbia, brown forest soil and smonitza are present at lower altitudes, together with podzolic and mountain black soil at higher ones. It should be mentioned that owing to the turbulent geological past of the entire area of the Balkan Peninsula (including the territory of Serbia), there are a number of refugial habitats, especially in the canyons. They are very important as havens for endemic and relict species, whose existence accounts for the region's high biodiversity.

The climate is continental, but there is an impact of Aegean Mediterranean climate, which reaches Eastern and Southeast Serbia in modified condition via the valleys of the Vardar and Southern Morava Rivers. The mean–annual temperature of Niš and its wider area is 11.2°C. The warmest month is July, with a mean temperature of 21.2°C, while the coldest is January with a mean temperature of 0.2°C. Mean annual precipitation is 567.25 mm/m<sup>2</sup>.

Until now, studies in Serbia have established the presence of six species from the family Papilionidae and 21 from the family Pieridae. Research on the butterflies of Southeast Serbia has been carried out by several authors, including TODOROVA & PETKOV (1915), who investigated the fauna of Dimitrovgrad and JAKŠIĆ (1988), who processed this part of Serbia during mapping of the butterfly fauna of former Yugoslavia on the basis of his summarized previous studies. JAKŠIĆ (1999) also gave a review of his studies on butterflies of the Stara Planina Mountains, where he established the presence of five species from the family Papilionidae and 15 species from the family Pieridae. In another paper, he treated butterflies of the Suva Planina Mountains near Niš (JAKŠIĆ, 2003a), where he established the presence of five species from the family Papilionidae and 10 from the family Pieridae.

## MATERIAL AND METHODS

All the material analyzed in this paper is part of the entomological collection of the Department of Biology and Ecology of Niš University's Science Faculty. Specimens were collected in the standard way, using an entomological net. Following collection, the material was prepared and labelled. The labels contain the name of the locality and the collection date as well as the Latin name and sex of the specimen, which were added later. Thus, the labels do not contain the names of collectors, all of whom were students in the Department of Biology and Ecology.

Determination of species on the basis of morphological characteristics of the wings was performed using determination keys (LAFRANCHIS, 2004; TOLMAN & LEWINGTON, 1997). Systematics and nomenclature follow The Lepidoptera of Europe (KARSHOLT & RAZOWSKI, 1996).

The material presented in this paper was collected in the period of 2001–2006, from April to September at 96 localities. Localities are presented in alphabetical order, with specified altitudes (a.s.l.) and UTM coordinates.

Aleksinac (180 m)	EP52
Babušnica (495 m)	FN16
Bagdala (450 m)	EP22
Banjica (470 m)	DP45
Belovići (90 m)	CQ98
Beograd (200 m)	DQ65
Bobovište (80 m)	EP52
Bojanine Vode (860 m)	EN88
Bovansko Jezero (420 m)	EP53
Bratmilovce (210 m)	EN86
Brestovac (200 m)	EN76
Brzi Brod (190 m)	EN79
Buštranje (400 m)	EM79
Crna Trava (980 m)	FN04
Čiflik (335 m)	EN79
Ćelije (284 m)	EP10
Delijski Vis (194 m)	EN79
Donji Adrovac (100 m)	EP51
Donji Dušnik (400 m)	EN88
Gabrovačka Reka River (200 m)	EN79
Gabrovac (190 m)	EN79
Gornja Studena (800 m)	EN88
Gornji Dušnik (450 m)	EN88
Gornji Matejevac (360 m)	EP70
Grabovica (80 m)	FQ12

Grbice (420 m)	DP87
Grljan (135 m)	FP05
Gulijan (655 m)	FP00
Guševac (476 m)	FP00
Humska Čuka (195 m)	EP70
Izvor (550 m)	EP90
Jelašnička Kisura (500 m)	EN89
Kamenica (280 m)	EP70
Kladovo (45 m)	FQ24
Kopaonik (2030 m)	DN89–EN06
Kragujevac: Šumarice (180 m)	DP97
Lazarevac (157 m)	DQ41
Lebane (275 m)	EN65
Ledena Stena (210 m)	EN79
Lepterijske (320 m)	EP73
Leskovac (225 m)	EN76
Majdanpek (340 m)	EQ71
Malča (220 m)	EN79
Mali Senj (200 m)	DP97
Mali Zvornik (160 m)	CQ51
Mazgoš (850 m)	FN57
Mramorsko Brdo (300 m)	EN69
Nikšić (630 m)	CN33
Niš (205 m)	EN79
Niš: Čair (200 m)	EN79
Niš: Bujanj (220 m)	EN79
Niš: Donja Vrežina (200 m)	EN79
Niš: Durlan (200 m)	EN79
Niš: Prosek (200 m)	EN79
Niš: Tvrđava (205 m)	EN79
Nišava (199 m)	EN79
Niška Banja (248 m)	EN89
Nova Varoš (1000 m)	DP01
Ozren (1174 m)	EP62–EP82
Pećinci (80 m)	DQ17
Petnica (600 m)	DQ10
Pirot (368 m)	FN38
Popovica (300 m)	EP73
Poskurice (320 m)	DP87
Prokuplje (266 m)	EN48
Resnik (300 m)	EP63
Sićevačka Kisura (250 m)	EN89
Sićevo (515 m)	EN89
Sokobanja (300 m)	EP73
Srebrno Jezero (80 m)	EQ35
Srem: Elemir (80m)	DR43

Stara Planina Mt.: Babin Zub (1750 m)	FP30
Suva Planina Mt. (1809 m)	EN89–FN07
Svrljig (375 m)	EP91
Šarce (300 m)	EN64
Šarlince (200 m)	EN67
Šljivovac (320 m)	DP87
Tijovac (630 m)	EP91
Trešnjevak (200 m)	DP96
Trgovište (600 m)	EP63
Trupale (170 m)	EP60
Tupale (800 m)	EN44
Veliko Gradište (82 m)	EQ45
Vinik (210 m)	EN79
Vlasina (1300 m)	FN13
Vranje (432 m)	EN71
Vrelo (800 m)	EP83
Vrnjačka Banja (230 m)	DP92
Zaječar (137 m)	FP05
Zemun (80 m)	DQ56
Zlatar (1627 m)	DP00
Zrenjanin (80 m)	DR43
Žabljak (Montenegro) (1450 m)	CN47
Žitkovac (85 m)	EP51
Župa (700 m)	DN45

## RESULTS AND DISCUSSION

### Fam. Papilionidae

#### *Zerynthia polyxena* (Denis & Schiffermüller, 1775), Southern Festoon

Babin Zub, June 6th, 2006, 1 ♂, 1 ♀; Belović, May 2003, 1 ♀; Gulijan, July 17th, 2006, 1 ♂; Guševac, Dubrava, July 5th, 2005, 2 ♀; Kamenica, July 7th, 2005., 1 ♂; Niš: Prosek, June 16th, 2005, 1 ♂; Niš: Nišava, August 19th, 2006, 1 ♀; Pirot, June 28th, 2005, 1 ♂; July 2006, 1 ♂; Suva Planina Mts., August 2003., 1 ♂.

JAKŠIĆ (1988) established the presence of this species in the wider area of the Suva Planina Mountains. HIL (1983) recorded its presence in Niš (JAKŠIĆ, 2003a). The remaining localities have not been recorded for the analyzed species, but they are inside the boundaries of its known area of distribution. *Zerynthia polyxena* is widespread in Central, Southern, and Southeast Europe. It has the status of vulnerable (VU) species in the Red Data Book of Serbian Butterflies (JAKŠIĆ, 2003b).

*Allancastria cerisy* (Godart, 1824), Eastern Festoon

Guševac, July 28th, 2005, 1♂; Zaječar, July 12th, 2002, 1♂; Niš, August 1st, 2002, 1♀; August 22nd, 2002, 1♀; Nišava, August 2006, 1♂; Svrlijig, May 18th, 2006, 1♂; July 17th, 2006, 1♂; Vlasina, April 17th, 2004, 1♂.

The distribution of this species is in the extreme southeastern part of the Balkan Peninsula. In Serbia, it has been recorded only in the eastern and southeastern parts. As for localities of specimens from the collection, none have been indicated in the literature for this species until now, but they are inside its established area of distribution in Serbia.

*Parnassius mnemosyne* (Linnaeus, 1758), Schwarzer Apollo

Leskovac, August 18th, 2006, 1♂; Niš, August 1st, 2005, 1♀; Pirot, May 2005, 1♂; May 20th, 2006, 1♂.

Localities of specimens from the collection are inside the boundaries of the known area of distribution of this species, but none of these localities are present in the literature for Southeast Serbia. JAKŠIĆ (2003a) collected this species in massive numbers at several localities in the Suva Planina Mts. near Niš. *Parnassius mnemosyne* is widespread in Central and Southern Europe, and its area of distribution extends across entire Balkan Peninsula.

*Ipheclides podalirius* (Linnaeus, 1758), Scarce Swallowtail

Babin Zub, June 2004, 1♀; Belović, April 2003, 1♂; Bovansko Jezero, July 27th, 2005, 1♂; Buštranje, July 19th, 2003, 1♂; Čiflik, July 28th, 2006, 1♂; Gabrovac, June 12th, 2004, 1♂; June 8th, 2006, 1♀; Grbice, July 28th, 2005, 1♀; Kragujevac: Šumarice, August 4th, 2005, 1♀; Lazarevac, July 23rd, 2004, 1♀; Lebane, June 21st, 2005, 1♂; Leskovac, August 18th, 2006, 1♂, 1♀; Malča, June 4th, 2006, 1♀; June 10th, 2006, 1♀; Mazgoš, May 28th, 2003, 1♀; Niš: Nišava, July 5th, 2006, 1♀; Niška Banja, June 16th, 2005, 2♂; Petnica, May 26th, 2004, 1♂; Pirot, July 26th, 2001, 1♀; August 9th, 2001, 1♂; May 12th, 2006, 1♂, 1♀; Popovica, August 2005, 1♂; Sićevačka Klisura, June 23rd, 2005, 1♂; Svrlijig, July 7th, 2005, 1♀; July 17th, 2006, 1♂; Šarce, June 1st, 2004, 1♂; Tupale, July 10th, 2004, 1♀; Vlasina, August 20th, 2004, 1♂.

This species has been recorded at several localities in the Suva Planina Mts. (JAKŠIĆ, 2003a), as well as in the gorge Sićevačka Klisura (JAKŠIĆ, 1988). Until now, this species had not been recorded at the remaining localities from the collection. It is widespread and common in Europe.

*Papilio machaon* (Linnaeus, 1758), Swallowtail

Belović, April 2003, 1♂; Brestovac, June 12th, 2007, 1♀; Mazgoš, May 28th, 2003, 1♀; Lebane: Šarce, June 1st, 2004, 1♂; Leskovac, August 18th, 2006, 2♂; Mali Zvornik, July 2005, 1♂; Nova Varoš, July 18th, 2006, 1♂; August 07th,

2006, 1 ♂; Pirot, May 15th, 2006, 1 ♂, 1 ♀; Popovica, August 2005, 1 ♂; Poskurice, August 4th, 2005, 1 ♀; Trupale, July 10th, 2004, 1 ♂; Zemun, August 16th, 2004, 1 ♀; Svrlijig, August 5th 2005, 1 ♂; June 15th, 2006, 1 ♀; July 29th, 2006, 1 ♂; Tijovac, June 25th, 2006, 1 ♂; Zvonačka Banja, August 7th, 2005, 1 ♀.

The species was recorded by JAKŠIĆ (1988) in Niš and the gorge Sićeavačka Klisura, as well as in the Suva Planina Mts. (JAKŠIĆ, 2003a). With respect to localities of specimens from the collection, this species was recorded previously only in Zemun on the distributional map of butterflies. The remaining localities have not been recorded before for this species in Serbia. It is widespread throughout all of Europe and has the status of an endangered (EN) species in the Red Data Book of Serbian Butterflies (JAKŠIĆ, 2003b).

## Fam. Pieridae

### *Leptidea sinapis* (Linnaeus, 1758), Wood White

Crna Trava, July 25th, 2004, 1 ♀; Donji Dušnik, July 8th, 2001, 1 ♂; Grabovica, August 1st, 2004, 1 ♀; Grljan, July 21st, 2006, 1 ♂; Mali Senj, June 10th, 2007, 1 ♂; Niš, May 25th, 2005, 1 ♂; Niš: Ledena Stena, July 7th, 2005, 1 ♂; Nišava, August 13th, 2005, 2 ♂; Nišava, August 19th, 2006, 2 ♂; Niška Banja, August 25th, 2004, 1 ♂; Pirot, July 20th, 2006, 1 ♂; Sićevo, July 20th, 2003, 1 ♀.

This species was not previously recorded in the literature from any of the following localities: Crna Trava, Donji Dušnik, Grabovica, Ledena Stena, Mali Senj, Niš, Niška Banja, and Pirot. It is widespread in Europe.

### *Anthocharis cardamines* (Linnaeus, 1758), Orange Tip

Kragujevac, March 30th, 2007, 1 ♂; Malča, May 26th, 2006, 1 ♂; May 10th, 2007, 1 ♂; Niš, June 2004, 1 ♀; July 10th, 2005, 1 ♀; July 2nd, 2006, 1 ♂; Pirot, July 12th, 2006, 1 ♂; Sićevo, July 11th, 2003, 1 ♂.

The species was not recorded previously at any of the collection localities. JAKŠIĆ (1988) recorded it at several localities in Northern, Northeast and Southern Serbia (indicated on the distributional map of Yugoslavia), as well as later (JAKŠIĆ, 2003a) at two localities in the Suva Planina Mts. It is a very common and widespread species in Europe.

### *Aporia crataegi* (Linnaeus, 1758), Black-veined White

Belović, May 2005, 1 ♀; August 27th 2004, 1 ♀, Gornji Dušnik, Suva Planina Mts., May 27th, 2003, 1 ♂; Jelašnička Klisura, June 24th, 2005, 1 ♂; Niš: Donja Vrežina, June 21st, 2005, 1 ♂; August 1st, 2005, 1 ♀; Niš: Čiflik, June 21st, 2005, 1 ♂; Pirot, August 21st, 2006, 1 ♀; Popovica, July 2006, 1 ♂; Sićevo, June 20th,

2005, 1♂; Svrljig, August 13th, 2006, 1♂; Vranje, July 24th, 2004, 1♂; Žabljak (Montenegro), August 2nd, 2005, 1♀.

Up to now, the species had not been recorded (JAKŠIĆ, 1988) at the following localities from the collection: Belovići, Gornji Dušnik, Svrljig, Popovica, Vranje and Žabljak. JAKŠIĆ (2003a) established its presence in the gorge Jelašnička Klisura. The remaining localities from the collection are in areas already marked on the UTM map of Serbia (JAKŠIĆ, 1988). This is a widespread and common species in Europe and on Balkan Peninsula.

*Pieris brassicae* (Linnaeus, 1758), Large White

Aleksinac, July 2005, 1♂; Bagdala, July 2003, 1♀; Beograd: Avala, July 8th, 2004, 1♂; Brestovac, June 3rd, 2007, 1♂; Ledena Stena, August 8th, 2005, 1♀; Leskovac, August 18th, 2006, 1♀.

The localities not previously recorded in the literature for this species are: Aleksinac, Brestovac, Bagdala, Ledena Stena, and Leskovac. It is widespread in Europe and has the status of a vulnerable (VU) species in the Red Data Book of Serbian Butterflies (JAKŠIĆ, 2003b).

*Pieris rapae* (Linnaeus, 1758), Cabbage Butterfly; Small White

Aleksinac, June 11th, 2003, 1♂; July 2005, 1♀; Beograd, August 16th, 2005, 1♂; Bobovište, July 2005, 2♂; Bojanine Vode, May 27th, 2003, 1♀; Bratmilovce, June 4th, 2005, 1♀; Brestovac, June 27th, 2007, 1♀; Brzi Brod, July 1st, 2006, 1♀; Delijski Vis, May 10th, 2006, 2♂; Donji Adrovac, June 24th, 2005, 1♂; Elemir, August 24th, 2004, 1♀; July 20th, 2006, 1♂; Gabrovac, July 9th, 2005, 1♀; Gabrovačka Reka, July 1st, 2006, 1♀; August 3rd, 2006, 1♂; August 5th, 2006, 1♀; Gornji Matejevac, June 18th, 2006, 1♂; Grbice, July 28th, 2005, 1♂; Guševac, July 5th, 2005, 1♂; Kladovo, August 14th, 2005, 1♀; Kragujevac: Šumarice, August 4th, 2006, 1♂, 1♀; Lepterijske, SB, June 2005, 1♂, 1♀; Leskovac, August 6th, 2005, 1♂; Malča, May 26th, 2006, 1♀; July 8th, 2006, 1♂; Mramorsko Brdo, July 14th, 2006, 1♂; Niš, April 20th, 2004, 1♀; July 2004, 1♂; May 21st, 2005, 1♂; May 21st, 2005, 1♀; June 28th, 2005, 2♂; June 12th, 2006, 1♂; June 20th, 2006, 1♀; August 19th, 2006, 1♂; Nišava, May 19th, 2006, 2♂; Niška Banja, June 2005, 1♀; Pirot, July 13th, 2005, 1♂; Poskurice, August 4th, 2005, 1♂, 1♀; Sićevo, July 14th, 2005, 1♂; Srebrno Jezero, July 15th, 2005, 1♂, 1♀; Suva Planina Mts., May 27th, 2003, 1♂; Svrljig, May 4th, 2005, 1♀; Šarlince, August 20th, 2004, 1♂; Trešnjevacki, August 8th, 2005, 1♂; Vranje, April 25th, 2004, 1♀; Vrelo, June 20th, 2004, 1♀; Zlatar, July 8th, 2005, 1♀; Žitkovac, August 2005, 1♂; June 25th, 2006, 1♂.

In view of the high number of localities in the collection, it is not surprising that many of them have not been recorded before in the literature for this area. They are: Aleksinac, Bobovište, Bojanine Vode, Brestovac, Bratmilovce, Donji Adrovac, Elemir, Grbice, Guševac, Kladovo, Leskovac, Poskurice, Srebrno



Jezero, the Suva Planina Mts., Šarlince, Vranje, and Žitkovac. This is a widespread and common species in Europe.

*Pieris ergane* (Geyer, 1828), Mountain Small White

Niš, June 12th, 2004, 1 ♂; Nikšić (Montenegro), August 7th, 2005, 1 ♀.

Both localities from the collection are new for this species. Niš is on the boundary of distribution of the species in Serbia. The given species is widespread only in Southern Europe, and its distribution extends along the southern part of Balkan Peninsula.

*Pieris napi* (Linnaeus, 1758.), Green-veined White; Mustard White

Babin Zub, July 2003, 1 ♂; Banjica, June 21st, 2004, 1 ♀; Brestovac, June 2nd, 2007, 1 ♀; June 15th, 2007, 1 ♂; Donji Dušnik, July 8th, 2001, 1 ♂; Gornji Matejevac, June 18th, 2006, 1 ♀; Jelašnička Klisura, August 9th, 2005, 1 ♀; Kladovo, June 15th, 2005, 1 ♂; Kopaonik, July 15th, 2006, 1 ♂; Kragujevac: Šumarice, August 4th, 2006, 1 ♂; Leskovac, July 17th, 2006, 1 ♂; August 18th, 2006, 1 ♂; Majdanpek, August 20th, 2006, 1 ♂; Mali Senj, June 10th, 2007, 1 ♂; Malča, May 26th, 2006, 1 ♂; Mramorsko Brdo, July 14th, 2006, 1 ♀; Niš: Durlan, May 3rd, 2005, 1 ♂; Niš, June 15th, 2005, 1 ♂; July 20th, 2005, 1 ♂; June 16th, 2006, 1 ♂, 1 ♀; June 20th, 2006, 1 ♂; July 2nd, 2006, 1 ♀; Niška Banja, July 2004, 1 ♂; August 25th, 2004, 1 ♂; May 2005, 1 ♂; July 2005, 1 ♂; Pećinci, June 10th, 2006, 1 ♀; Pirot, July 14th, 2005, 1 ♂; July 11th, 2006, 1 ♂, 1 ♀; Resnik, July 2005, 1 ♀; Suva Planina Mts., May 2nd, 2005, 1 ♂, 1 ♀; Veliko Gradište, August 6th, 2006, 1 ♀; Vrelo, June 30th, 2004, 1 ♂; Zlatar, July 28th, 2006, 1 ♂.

This species was recorded by JAKŠIĆ (2003a) at several localities on the Suva Planina Mts. Localities from the collection not recorded before in the literature for this species are: Banjica, Brestovac, Gornji Matejevac, Jelašnička Klisura, Kladovo, Leskovac, Majdanpek, Mali Senj, Malča, Mramorsko Brdo, Niš, Niška Banja, Pećinci, Resnik, Kragujevac: Šumarice, Veliko Gradište, and Vrelo. It is a common and widespread species in Europe.

*Pontia edusa* (Fabricius, 1777), Bath White

Leskovac, July 17th, 2006, 1 ♀; August 18th, 2006, 1 ♀; Pirot, July 10th, 2006, 1 ♂; July 15th, 2006, 1 ♀; Poskurice, August 4th, 2005, 1 ♀; Župa, July 20th, 2006, 1 ♂; July 19th, 2006, 1 ♂.

None of the collection localities have been recorded before in the literature for this species, but they are all within the boundaries of its known area of distribution. The species is widespread in Eastern, Southeast Europe and on the Balkan Peninsula.

*Colias erate* (Esper, 1805), Eastern Pale Clouded Yellow

Izvor, July 25th, 2005, 1 ♂; Leskovac, August 18th, 2006, 1 ♂; Zrenjanin, May 20th, 2005, 1 ♂.

This species is widespread only in Southeast Europe. In the literature for Serbia, it has been recorded on only one UTM field, on the eastern margin of Serbia. The collection localities thus represent a westward extension of its known distribution.

*Colias croceus* (Fourcroy, 1785), Clouded Yellow

Babin Zub, July 9th, 2002, 1 ♂, 1 ♀; Belović, May 2003, 1 ♂, 1 ♀; Bratmilovce, June 4th, 2005, 1 ♂; Buštranje, June 23rd, 2003, 1 ♂; Čelije (lake), July 2003, 1 ♀; Čiflik, July 28th, 2006, 1 ♂; Delijski Vis, May 19th, 2006, 1 ♂; Donji Dušnik, June 3rd, 2005, 1 ♀; Gabrovac, July 8th, 2005, 1 ♂; Gabrovačka Reka, August 1st, 2006, 1 ♂; August 3rd, 2006, 1 ♂; Gornja Studena, April 12th, 2005, 1 ♂; June 12th, 2005, 1 ♀; Grljan, July 21st, 2006, 1 ♂; August 10th, 2006, 1 ♂; Humska Čuka, July 25th, 2005, 1 ♂; Kopaonik, July 10th, 2006, 1 ♂; Kragujevac: Šumarice (lake), September 4th, 2006, 1 ♂; Leskovac, July 17th, 2006, 1 ♀; August 18th, 2006, 1 ♀; Pirot, August 8th, 2002, 1 ♀f; Vlasina, June 5th, 2003, 1 ♂; Petnica, May 2004, 1 ♂; Niš, July 2004, 2 ♀; June 2005, 1 ♂; July 10th, 2005, 1f; July 17th, 2005, 1 ♂; July 2006, 1 ♂; Nišava, July 2005, 1 ♂; July 2nd, 2006, 1 ♂; August 19th, 2006, 1 ♀; Niška Banja, August 20th, 2005, 1 ♂; Ozren, September 2006, 1 ♂; Pirot, July 12th, 2006, 1 ♀; July 26th 2006, 1 ♂; July 28th, 2006, 1 ♀; Popovica, September 2005, 1 ♂; Sokobanja, June 2nd, 2007, 1 ♂; June 2007, 1f; Svrlijig, July 22nd, 2005, 1 ♂; August 2005, 1 ♀; July 6th, 2006, 1 ♀; Vrnjačka Banja, May 2005, 1 ♂; Veliko Gradište, August 5th, 2006, 1 ♀; August 6th, 2007, 1 ♀; Zemun, July 16th, 2004, 1 ♀.

Among the collection's localities, only Zemun and Kopaonik (JAKŠIĆ, 1988) have been recorded before in the literature for this species. It was also recorded at several localities in the Suva Planina Mts. (JAKŠIĆ, 2003a). The remaining localities have not been recorded previously for this species, but they are within the boundaries of its so far established area of distribution. It is a widespread and common species in Europe, especially in its southern part.

*Colias hyale* (Linnaeus, 1758), Pale Clouded Yellow

Bratmilovce, June 4th, 2006, 1 ♀; Donji Dušnik, June 30th, 2004, 1 ♂; Gabrovačka Reka, August 1st, 2006, 1 ♂; Kragujevac: Šumarice (lake), September 4th, 2006, 1 ♀; Leskovac, August 6th, 2005, 1 ♀; August 18th, 2006, 1 ♂, 1 ♀; Ozren, September 2005, 1 ♀; Ozren, May 2006, 1 ♀; Pirot, August 6th, 2006, 1 ♀.

The localities from the collection that are new for this species in Serbia are: Bratmilovce, Šumarice, Leskovac, Donji Dušnik, and Gabrovačka Reka (Niš). This species is widespread and common in Central and Southern Europe, with a distribution that extends across the entire Balkan Peninsula.

*Colias alfacariensis* (Ribbe, 1905), Berger's Clouded Yellow

Čiflik, July 28th, 2006, 1 ♂; Guševac, Dubrava, July 5th, 2005, 1 ♀; Kragujevac: Šumarice (jezero), September 4th, 2006, 1 ♂; Leskovac, July 17th, 2006, 1 ♂; Mali Zvornik, July 2005, 1 ♂; Malča, April 25th, 2007, 1 ♂; May 2007, 1 ♂; Niš, June 3rd, 2005, 1 ♂; June 11th, 2005, 1 ♂; Svrlijig, August 13th, 2005, 1 ♂; Šljivovac, August 06th, 2005, 1 ♂.

In the literature for this species, none of the localities from the collection have been recorded before, but they are within the boundaries of its known area of distribution in Serbia. The species is widespread and common in Central and Southern Europe. Its distribution covers the entire Balkan Peninsula.

*Gonepteryx rhamni* (Linnaeus, 1758), Brimstone butterfly

Bratmilovce, July 2nd, 2005, 1 ♂; Brestovac, July 8th, 2005, 1 ♀; Buštranje, Vranje, July 3rd, 2003, 1 ♂; Kladovo, May 27th, 2004, 1 ♀; Kragujevac: Šumarice, March 30th, 2007, 1 ♂; Malča, May 26th, 2006, 2 ♂; Niš, July 22nd, 2005, 1 ♂; June 29th, 2004, 1 ♀; June 2005, 1 ♀; Nišava, Niš, June 2006, 1 ♂; Ozren, July 2006, 1 ♀; Pirot, August 9th, 2001, 1 ♂; July 26th, 2006, 1 ♂; Svrlijig, September 2nd, 2005, 1 ♂; July 22nd, 2006, 1 ♀; Veliko Gradište, July 11th, 2006, 1 ♂; August 2th, 2006, 1 ♂.

Until now, none of the localities from the collection have been recorded in the literature for this species, but they are within the boundaries of its known distribution. The given species is common and widespread in Europe.

## CONCLUSIONS

During this research, a total number of 308 individuals from the collection were analyzed. The 72 specimens belonging to the family Papilionidae included five of the six species recorded in Serbia. From the family Pieridae, the 236 specimens analyzed included 13 of the 21 species recorded on the territory of Serbia.

Among representatives of the family Papilionidae, the most numerous species are *Iphiclides podalirius* (43%) and *Papilio machaon* (26.3%), which has the status of an endangered species. Among analyzed specimens of the family Pieridae in the collection, the most numerous species is *Pieris rapae* (24.5%), followed by *Colias croceus* (20.7%) and *Pieris napi* (15.6%). This is an expected result considering the fact that these are very common species with continuous distribution on the territory of Serbia.

The greatest numbers of specimens from both families were collected in Niš and its surrounding area (Niška Banja, Malča, Čiflik, Mramorsko Brdo, the Suva Planina Mts., Aleksinac, and Pirot), which is an expected result considering the

faculty's location and the fact that the most of the students who did the collecting live in this region.

Among localities from the collection, many are new on the territory of Serbia for butterflies from these two families. The most important contribution of the collection and this paper is the established westward extension of the known distribution of *Colias erate*. The fact that there are so many new localities underlines the need for further expansion of the collection, as a very important source of data on butterflies in Serbia. We expect that further field work will provide new information about this area's butterflies, which will complement our knowledge about them and make it possible to preserve this valuable part of biodiversity.

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ПРИЛОГ ПОЗНАВАЊУ ФАУНЕ ЛЕПТИРА  
(LEPIDOPTERA: PAPILIONIDAE И PIERIDAE)  
ЈУГОИСТОЧНЕ СРБИЈЕ

ЗОРИЦА СТОЈАНОВИЋ-РАДИЋ

ИЗВОД

На Одсеку за биологију Природно-математичког факултета у Нишу, постоји зоолошка збирка која садржи вредан материјал Lepidoptera. У овом раду приказани су резултати анализе дневних лептира из фамилија Papilionidae и Pieridae из дела збирке са дневним лептирима. Материјал збирке из фамилије Papilionidae је садржао 72 јединке, у оквиру којих је детерминисано 5 врста. Збирка фамилије Pieridae садржала је 236 јединки, од којих је утврђено присуство 13 врста. Јединке из обе фамилије сакупљане су на укупно 96 локалитета.

Иако је скоро свака од детерминисаних врста широко распрострањена у Европи и на Балканском полуострву, утврђено је постојање нових локалитета, који до сада нису забележени на карти реаспрострањења дневних лепита у Србији. Такође, утврђено је померање ареала врсте *Colias erate* ка западу.

Најчешћи локалитети били су Ниш, Нишка Бања, Малча, Чифлик, Мраморско брдо, Сува планина, Алексинац и Пирот, што је био и очекиван резултат с обзиром на локацију факултета. Врсте које су сакупљене на највећем броју локалитета из збирке су *Pieris rapae* из фамилије Pieridae и *Ipheclides podalirius* из фамилије Papilionidae. Ово је такође очекиван резултат јер су ове врсте веома честе и широко распрострањене у Србији.

Ови резултати указују на значај даљег проширивања и анализе збирке као битног извора података о дистрибуцији дневних лептира у Србији.

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