



**CONTRIBUTION TO THE KNOWLEDGE OF NEUROPTERIDA
(RAPHIDIOPTERA, NEUROPTERA) OF SERBIA COLLECTED
IN THE PERIOD 2015-2016**

Dušan DEVETAK^{1,2}, Predrag JAKŠIĆ³, Ana NAHIRNIĆ-BESHKOVA⁴,
Franc JANŽEKOVIČ¹, Tina KLENOVŠEK¹, Jan PODLESNIK¹ and Vesna KLOKOČOVNIK¹

¹Department of Biology, Faculty of Natural Sciences and Mathematics,
University of Maribor, Koroška cesta 160, 2000 Maribor, Slovenia

²e-mail: dusan.devetak@guest.arnes.si

³Čingrijina 14/25, Zvezdara, 11000 Beograd, Serbia

⁴National Museum of Natural History, Bulgarian Academy of Sciences,
Tsar Osloboditel Blvd 1, 1000 Sofia, Bulgaria

Abstract – As a result of field studies in 2015–2016 in Serbia, mainly during two field collecting trips, four species of Raphidioptera and 65 species of Neuroptera were collected. The following species are reported from Serbia for the first time: *Ornatoraphidia flavilabris* (A. Costa, 1855), *Phaeostigma pilicollis* (Stein, 1863), *Nothochrysa fulviceps* (Stephens, 1836), *Nineta pallida* (Schneider, 1846), *Apertochrysa ventralis* (Curtis, 1834), *Chrysoperla mediterranea* (Hölzel, 1972), *Hemerobius nitidulus* Fabricius, 1777, *Coniopteryx tineiformis* Curtis, 1834 and *Mantispilla perla* (Pallas, 1772).

KEY WORDS: Lacewings, faunistics, Balkan Peninsula

Izvešček – PRISPEVEK K POZNAVANJU MREŽEKRILCEV - NEUROPTERIDA (RAPHIDIOPTERA, NEUROPTERA) SRBIJE, ZBRANIH V OBDOBJU OD 2015 DO 2016

Med terenskim delom v Srbiji v obdobju 2015–2016, predvsem na dveh odpravah, smo nabrali štiri vrste kamelovratnic (Raphidioptera) in 65 vrst pravih mrežekrilcev (Neuroptera). Naslednje vrste so nove za Srbijo: *Ornatoraphidia flavilabris* (A. Costa, 1855), *Phaeostigma pilicollis* (Stein, 1863), *Nothochrysa fulviceps* (Stephens, 1836), *Nineta pallida* (Schneider, 1846), *Apertochrysa ventralis* (Curtis,

1834), *Chrysoperla mediterranea* (Hölzel, 1972), *Hemerobius nitidulus* Fabricius, 1777, *Coniopteryx tineiformis* Curtis, 1834 and *Mantispilla perla* (Pallas, 1772).
KLJUČNE BESEDE: Mrežekrilci, favnistika, Balkanski polotok

Introduction

The data on Neuropterida in Serbia are fragmentary and scattered in individual papers. To date, there is no comprehensive work on the superorder in the country.

In a period 2011–2019, zoologists from the Department of Biology, Faculty of Natural Sciences and Mathematics, University of Maribor, Slovenia organized nine neuropterological expeditions to the Balkan Peninsula with the aim of improving the knowledge of the less investigated Balkan countries. Two field trips in the periods of 21–28 June 2015 and 3–10 July 2016 were devoted to Serbia (Devetak 2021). The aim of the collecting trips was to emend the species lists of Neuropterida for the country. In addition to Slovenian biologists, local researchers also collected data in the field.

In the present study, a survey of Neuropterida collected in Serbia in 2015 and 2016 is given.

Material and methods

Serbia is divided into five administrative units – statistical regions. Field trips took place in four of them. Collection sites included in the checklist are detailed in Table 1. For each species, a list of localities is given, based on collected material. The locality-codes include the three-letter abbreviations of the regions and a numerical code (Table 1).

Insects were collected using a sweep net and portable light traps. Specimens were preserved in 70% ethanol and deposited in the first author's collection. We followed the nomenclature and taxonomy proposed by Aspöck et al. (1980, 2001), Rausch and Weißmar (2007), Lacewing Digital Library (Oswald 2017) and Duelli and Henry (2022). In our paper the understanding of the taxonomic status of owlflies (Ascalaphidae) doesn't follow Oswald (2017); ascalaphids are here treated at the family level. We list only those species of *Apertochrysa* Tjeder, 1966 whose taxonomic status and terminology are clear (Duelli and Henry, 2022).

Results

In Serbia in the period 2015–2016 four species of Raphidioptera and 65 species of Neuroptera were collected.

Table 1: List of collection sites in Serbia in 2015-2016.

| Region | Code | Collection site |
|------------------------------------|-------|--|
| Vojvodina | | |
| | VOJ 1 | South Banat District: Deliblatska peščara, center; steppe; 146 m; 44°53'06.7"N 021°04'45.5"E; 8. VII. 2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 2 | South Banat District: Deliblatska peščara, center; dry meadow; 152 m; 44°53'59.4"N 021°06'11.6"E; 09.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 3 | South Banat District: Deliblatska peščara, Šumarak; grassland-sand dunes; 100 m; 44°48'32.1"N 021°10'25.8"E; 09.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 4 | South Banat District: Deliblatska peščara, north of Šušara; grassland; 180 m; 44°56'56"N 021°08'05"E; 8.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 5 | South Banat District: Deliblatska peščara, near Deliblato; sands/steppe; 135 m; 44°51'51.0"N 021°03'35.6"E; 8.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 6 | South Banat District: Deliblatska peščara, west of Grebenac; mixed forest (<i>Robina</i> , <i>Pinus</i>); 125 m; 44°54'19"N 021°12'48"E; 09.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| | VOJ 7 | South Banat District: Deliblatska peščara, south east; forest house; light trap; 86 m; 44°48'44.4"N 021°13'41.9"E; 10.VII.2016; Klenovšek, Janžeković, Jakšić & Devetak leg. |
| Belgrade | | |
| | BEL 1 | Beograd, Zvezdara; 185 m; 44°47'53"N 20°30'18"E; 25.VII.2015; 05.VIII.2015; 14.VIII.2015; 1.IX.2015; 22.-23.II.2016; 01.IV.2016; 29.VIII.2016; 21.IX.2016; P.Jakšić leg. |
| | BEL 2 | Beograd, Kumodraž, 230 m, 44°43'22"N 20°30'43"E; 3.VI.2015; P.Jakšić leg. |
| Šumadija and Western Serbia | | |
| | ŠWS 1 | Rasina District: river Zapadna Morava, 7 km NNE of Kruševac; 140 m; 43° 38.375' N 21° 22.664' E; 25.VI.2015; Klokočovník, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | ŠWS 2 | Zlatibor District: river Drina, lake Perućaćko jezero, near Perućac; 300-315 m; 43° 57.563' N 19° 23.572' E; 25.VI.2015; Klokočovník, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | ŠWS 3 | Zlatibor District: river Drina, lake Perućaćko jezero, Perućac; Hotel Jezero; 43°57'44"N 19°24'29"E; 27.VI.2015; Devetak leg. |

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| ŠWS 4 | Zlatibor District: Tara National Park: Gorge of the Derвента river; 430 m; 43° 57.087' N 19° 21.451' E; 25.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 5 | Zlatibor District: Tara National Park: Gorge of the Derвента river, Predov Krst; 610 m; 43° 56.518' N 19° 20.723' E; 25.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 6 | Zlatibor District: Tara National Park: Križevac near Predov Krst; <i>Quercus</i> forest; 724 m; 43° 56.415' N 19° 20.163' E; 27.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 7 | Zlatibor District: Tara National Park: Predov Krst; meadow with <i>Juniperus</i> , <i>Pinus</i> , <i>Picea</i> , <i>Acer</i> , <i>Salix</i> ; 997 m; 43° 56.460' N 19° 18.899' E; 27.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 8 | Zlatibor District: Tara National Park: Križevac near Predov Krst; mixed forest; 755 m; 43° 56.521' N 19° 20.165' E; 27.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 9 | Zlatibor District: Tara National Park: Jezero Zaovine; <i>Pinus</i> , <i>Picea</i> ; 935 m; 43°52.633'N 19°24.972'E; 27.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 10 | Zlatibor District: Tara National Park: Jezero Zaovine: Bjeluša; brook; 885 m; 43° 52.988' N 19° 21.707' E; 27. VI. 2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 11 | Zlatibor District: Tara National Park: Vasilići-Filipovići; meadow with <i>Juniperus</i> , <i>Pinus</i> , <i>Picea</i> ; 1105 m; 43° 51.514' N 19° 22.910' E; 27. VI. 2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| ŠWS 12 | Zlatibor District: Javor Mt., Vasilin vrh peak; 1489 m; 43°26'28''N 20°03'06''E; 12.VII.2015; A. Nahirnić-Beshkova & S. Beshkov leg. |
| ŠWS 13 | Zlatibor District: Prijepolje. Mileševka river; 685 m; 07.VI.2015, A. Nahirnić-Beshkova leg.; |
| ŠWS 14 | Zlatibor District: Prijepolje: Jadovnik Mt., Sopotnica: Ščepanica, 8.VII.2015; 26.VI.2016; P. Jakšić leg. |
| ŠWS 15 | Zlatibor District: Četanica Mt. plateau; near Karaula village; 1355 m; 43°19'13''N 19°49'47''E; 04.VIII.2015; A. Nahirnić-Beshkova & S. Beshkov leg. |
| ŠWS 16 | Zlatibor District: Krnjača Mt., near main road, between Bare and Busara; 43°25'25''N 19°23'53''E; 26.VII.2015; A. Nahirnić-Beshkova leg. |
| ŠWS 17 | Zlatibor District: Zlatar Mt., Suvi Čečar; 1118 m; 43°26'31''N 19°49'45''E; 23.VII.2015; A. Nahirnić-Beshkova leg. |
| ŠWS 18 | Zlatibor District: Kitonja Mt., above Vujovići village; 1100 m; 43°29'54''N 19°41'49''E; 27.VII.2015; A. Nahirnić-Beshkova leg. |

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| | ŠWS 19 | Zlatibor district: Prijepolje: Jadovnik Mt., Milošev do; 43°18'46"N 19°48'14"E ; 28.VI.2014; P. Jakšić leg. |
| | ŠWS 20 | Kolubara District: Maljen Mt., Divčibare; 850 m; 11.VII.2015; 19.VII.2015; P. Jakšić leg. |
| | ŠWS 21 | Zlatibor district: Javor Mt., between Vasilin vrh and Jankov vrh peaks, 1397 m, 43°26'14"N, 20°02'56"E, 04.VIII.2015; leg. A. Nahirnić & S. Beshkov |
| | ŠWS 22 | Zlatibor district: Pobjenik Mt., Pribojska Goleša, Đurovići village, 43°30'54"N, 19°29'54"E, 1187 m, 25.VII.2015, leg. A. Nahirnić |
| | ŠWS 23 | Zlatibor district: Pobjenik Mt., Borak summit, 1420 m, 43°28'45"N, 19°32'47", 25.VII.2015; leg. A. Nahirnić |
| Southern and Eastern Serbia | | |
| | SES 1 | Braničevo District: National Park Đerdap: Brnjička, Brnjica; near river Danube; 75 m; 44°39'21.8"N 021°45'54.2"E; 07.VII.2016; Devetak leg. |
| | SES 2 | Braničevo District: Golubac; 250 m; 12.VI.2015, P. Jakšić leg. |
| | SES 3 | Braničevo District: National Park Đerdap: Golubac: Ridan, close to the river Donava; 90 m; 44°39'36.5"N 021°41'20.4"E; 08.VII.2016; Devetak leg. |
| | SES 4 | Pirot district: Kanjon Jerme: Vlasi; 491 m; 42° 59.672' N 22° 38.230' E; 22.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | SES 5 | Pirot district: Zvonačka Banja; 690 m; 42° 55.740' N 22° 35.558' E; 22.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | SES 6 | Pirot district: Dimitrovgrad: Mt Vidlič, south slope; 630 m; 43° 01.806' N 22° 47.917' E; 22.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | SES 7 | Pirot district: Dimitrovgrad: Mt Vidlič, south slope; planted forest with <i>Pinus nigra</i> ; 650 m; 43°02'31.6"N 22°49'16.3"E; 22.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžeković, Devetak leg. |
| | SES 8 | Pirot district: Mt. Vidlič, Crni Vrh, 1046-1115 m; 43°11'13"N 22°39'03"E; 29.V.-15.VI.2015; A.Nahirnić-Beshkova leg. & S.Beshkov leg. |
| | SES 9 | Pirot District: Vidlič Mt.: Crni vrh; meadows/ light forest; 1115 m; 43°11'12.1"N 022°39'02"E; 06. VII. 2016; Jakšić, Klenovšek, Janžeković & Devetak leg. |

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| SES 10 | Pirot district: Mt. Vidlič, Srednja Glama near Koprivštica; 995 m; 43°14'05"N 22°36'37"E; 14.VI.2015; A.Nahirnić-Beshkova leg. |
| SES 11 | Pirot district: Mt. Vidlič, road between Pirot and Rsavci below Skrča; 943 m; 43°11'07"N 22°43'21"E; 31.V.2015; A.Nahirnić-Beshkova leg. |
| SES 12 | Pirot District: Mt. Vidlič, Basarski Kamen, 991 m; 43°09'09"N 22°41'06"E; 30.V.2015; A.Nahirnić-Beshkova leg. |
| SES 13 | Pirot District: Mt. Vidlič, 1.5 km NWW from Basara village, 885 m; 43°10'11"N 22°40'17"E; 30.V.2015; A.Nahirnić-Beshkova leg. |
| SES 14 | Pirot District: Vidlič Mt.; uvala; 985 m; 43°10'37"N 22°40'07"E; 06.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 15 | Pirot District: Vidlič Mt.: north east of Pirot; <i>Pinus nigra</i> planted forest; 725 m; 43°10'19"N 22°38'35"E = 43.171944, 22.643056; 06.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 16 | Pirot District: Vidlič Mt.: Hotel Stara; 1052 m; light trap; 43°10'49.5"N 22°41'19.7"E; 04.-07.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 17 | Pirot District: Vidlič Mt.; oak forest (<i>Fagus</i> , <i>Acer</i> , <i>Crataegus</i> , <i>Corylus</i>); 980 m; 43°11'22.2"N 22°39'12.7"E; 06.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 18 | Pirot District: Vidlič Mt.; dry rocky grassland (sporadic <i>Ulmus</i> , <i>Carpinus orientalis</i> , <i>Crataegus pentagyna</i>); 970 m; 43°11'22.7"N 22°38'35.7"E; 06.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 19 | Pirot District: Vidlič Mt.; meadow/ forest edge; sporadic <i>Ulmus</i> , <i>Carpinus orientalis</i> , <i>Crataegus</i> ; 970 m; 43°11'16"N 22°38'44"E; 06.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 20 | Pirot District: Visočka Ržana; 1030 m; 43°11'04"N 22°42'31"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 21 | Pirot District: between Visočka Ržana and Motel Tigar; mixed forest (<i>Pinus</i> , <i>Crataegus</i> , <i>Fagus</i>); 955 m; 43°10'54"N 22°43'28"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 22 | Pirot District: Balkan (Stara planina), Dojkinci; along river Dojkinačka reka; 958 m; 43°15'19"N 22°46'34"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 23 | Pirot district: Balkan (Stara planina), Dojkinci; along river Dojkinačka reka; 920 m; 43°14'45"N 22°46'35"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 24 | Pirot District: south of Dojkinci; planted forest with <i>Pinus</i> ; 770 m; 43°11'36"N 22°48'54"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |

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| SES 25 | Pirot District: Dojkinci; Ponor; 1550 m; 43°15'23.5"N 022°48'31.2"E; 05.VII.2016; Jakšić leg. |
| SES 26 | Pirot District: Rsovcı: Manastir Sv. Ilija; 725 m; 43°10'09.0"N 022°45'20"E; 05.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 27 | Nišava district: Jelašnička klisura, Jelašnica, 23.VI.2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| SES 28 | Nišava district: Niš, east, Nišava river, 23. VI. 2015; Klokočovnik, Klenovšek, Podlesnik, Janžekovič, Devetak leg. |
| SES 29 | Nišava district: Svrliške planine: Gradinje, Padina; 961 m; 43°19'13"N 22°20'09"E; 07.VII.2015; A. Nahirnić-Beshkova leg. |
| SES 30 | Nišava District: Suva planina; Bojanine vode; forest <i>Acer, Fagus, Tilia</i> ; 860 m; 43°13'16.7"N 022°06'46.3"E; 04.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 31 | Nišava District: Suva planina; forest; 840 m; 43°12'37.2"N 022°07'53.7"E; 04.VII.2016; T. Klenovšek leg. |
| SES 32 | Nišava District: Suva planina; meadow; 1005 m; 43°12'55.5"N 022°07'25.7"E; 04.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 33 | Nišava District: Suva planina; Devojački grob; mountain crest, meadows with sporadic bushes (<i>Sorbus aria, Juniperus</i>); 1305-1320 m; 43°11'52.6"N 022°08'35.2"E; 04.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 34 | Nišava District: Suva planina; near Gornja Studena; 743 m; 43°12'34.3"N 022°08'00.0"E; 04.VII.2016; Jakšić, Klenovšek, Janžekovič & Devetak leg. |
| SES 35 | Pčinja District: Preševo town, 2 km W Trnava village; 696 m; 42°16'33"N 21°36'57"E; 27.VIII.2015; 18.IX.2015; 10.XI.2015; light trap; A. Nahirnić-Beshkova & S. Beshkov leg. |
| SES 36 | Pčinja District: Preševo, Reljan, 714 m; 42°19'34"N 021°47'13"E; 07.V.2015; P. Jakšić leg. |
| SES 37 | Pčinja District: Starac Mt., Turski grob; 780 m; 42°20'38"N 21°53'03"E ; 4.VII.2015; 19.IX.2015; 11.XI.2015; A. Nahirnić-Beshkova & S.Beshkov leg. |
| SES 38 | Pčinja District: Starac Mt., between Budovija and Staračka Kula peak; 823 m; 42°20'11"N 021°52'27"E; 05.VIII.2016; light trap; A.Nahirnić-Beshkova, S.Beshkov leg. |
| SES 39 | Pčinja District: Pčinja river Valley: Trgovište, Vražji kamen; 663 m; 42°23'06"N 22°03'06"E; 21.IX.2015; A. Nahirnić-Beshkova & S. Beshkov leg. |

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| SES 40 | Pčinja District: Preševo, 2 km W from Trnava village; serpentine; 696 m; 42°16'33''N 21°36'57''E; 10.XI.2015; A. Nahirnić-Beshkova & S. Beshkov leg. |
| SES 41 | Pčinja District: Mt. Kozjak, Delinovica village; 774 m; 42°19'02''N 021°54'36''E; 03.VII.2015; A.Nahirnić-Beshkova leg. |
| SES 42 | Nišava district: Mt. Tresibaba; Tresibaba pass, 720 m, 43°29'16''N 22°13'25''E; 22.V.2016; A.Nahirnić-Beshkova leg. |
| SES 43 | Pirot district: Mt. Vidlič, 1 km N of Basara village, 985 m; 43°09'59''N 22°40'53''E; 2016.07.22; A.Nahirnić-Beshkova leg. |
| SES 44 | Pirot district: Šljivovički Vis Mt., Stranje, 912 m, 43°09'02''N, 22°22'00''E, 19.V.2016; A.Nahirnić-Beshkova leg. |
| SES 45 | Pčinja district: Kostin Čukar Mt., Goli Čukar, 750 m, 42°21'03''N, 21°54'01''E, 02.VII.2015, leg. A. Nahirnić |
| SES 46 | Pčinja district: Kostin Čukar Mt., Bejavica, 733 m, 42°21'01''N, 21°53'19''E, 02.VII.2015; leg. A. Nahirnić |
| SES 47 | Pčinja district: Kozjak Mt., Virovi peak, 1200-1285 m, 42°18'36''N, 21°55'42''E, 03.VII.2015; leg. A. Nahirnić. |
| SES 48 | Starac Mt., Vrh above Gornji Starac village, 794 m, 42°19'32''N, 21°52'26''E, 04.VII.2015; leg. A. Nahirnić |

RAPHIDOPTERA

RAPHIDIIDAE

Dichrostigma flavipes (Stein, 1863)

Literature records for Serbia: Guelmino (1996); Sziráki (2014).

Material examined: Southern and Eastern Serbia: SES 24.

Ornatoraphidia flavilabris (Costa, 1855)

Material examined: Southern and Eastern Serbia: SES 41.

First record in Serbia.

Phaeostigma pilicollis (Stein, 1863)

Material examined: Southern and Eastern Serbia: SES 36.

First record in Serbia.

***Phaeostigma notatum* (Fabricius, 1781)**

Literature records for Serbia: Aspöck et al. (2001).

Material examined: Šumadija and Western Serbia: ŠWS 7.

NEUROPTERA

Suborder Nevrorthiformia

NEVRORTHIDAE

***Nevrorthus apatelios* H. Aspöck, U. Aspöck & Hölzel, 1977**

Literature records for Serbia: Aspöck et al. (1977), Malicky (1984), Devetak and Jakšić (2003), Jones and Devetak (2009), Marković V. et al. (2016).

Material examined: Southern and Eastern Serbia: SES 5, SES 22.

A few specimens have been found: two along a stream near Zvonačka Banja and ten individuals on riparian vegetation along the Dojkinačka reka river (Fig. 1).



Fig. 1: Riparian vegetation along the Dojkinačka reka river, habitat of *Nevrorthus apatelios*. Photo: D. Devetak.

Suborder Hemerobiiformia**OSMYLIDAE*****Osmylus fulvicephalus* (Scopoli, 1763)**

Literature records for Serbia: Živojinović (1950), Živić et al. (2001, 2006), Devetak and Jakšić (2003), Đuknić et al. (2010), Devetak et al. (2019b).

Material examined: Southern and Eastern Serbia: SES 5, SES 28. Šumadija and Western Serbia: ŠWS 4, ŠWS 10, ŠWS 13, ŠWS 14 (8.VII.2015), ŠWS 19.

CHRYSOPIDAE***Nothochrysa fulviceps* (Stephens, 1836)**

Material examined: Southern and Eastern Serbia: SES 35 (18.IX.2015).

First record in Serbia.

***Hypochrysa elegans* (Burmeister, 1839)**

Literature records for Serbia: Devetak et al. (2019b).

Material examined: Southern and Eastern Serbia: SES 8. Šumadija and Western Serbia: ŠWS 8.

***Nineta flava* (Scopoli, 1763)**

Literature records for Serbia: Mocsáry (1899), Devetak and Jakšić (2003).

Material examined: Southern and Eastern Serbia: SES 32.

***Nineta pallida* (Schneider, 1846)**

Material examined: Šumadija and Western Serbia: ŠWS 12.

First record in Serbia.

***Nineta principiae* Monserrat, 1981**

Literature record for Serbia: Devetak et al. (2019b).

Material examined: Southern and Eastern Serbia: SES 39. Šumadija and Western Serbia: ŠWS 6.

***Chrysopidia ciliata* (Wesmael, 1841)**

Literature record for Serbia: Devetak and Jakšić (2003), Guelmino (1996).

Material examined: Southern and Eastern Serbia: SES 22.

***Chrysopa perla* (Linnaeus, 1758)**

Literature records for Serbia: Živojinović (1950), Petrik (1958), Stančić (1962), Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2019b).

Material examined: Belgrade: BEL 2. Southern and Eastern Serbia: SES 23, SES 16, SES 29, SES 38. Šumadija and Western Serbia: ŠWS 7, ŠWS 11,

***Chrysopa walkeri* McLachlan, 1893**

Literature records for Serbia: Mocsáry (1899), Devetak (1992).

Material examined: Belgrade: BEL 2. Southern and Eastern Serbia: SES 6, SES 10, SES 11, SES 12, SES 24, SES 29, SES 32, SES 38. Šumadija and Western Serbia: ŠWS 20 (11.VII.2015), ŠWS 14 (8.VII.2015).

***Chrysopa dorsalis* Burmeister, 1839**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b).

Material examined: Southern and Eastern Serbia: SES 6, SES 7 (on *Pinus nigra*), SES 24. Šumadija and Western Serbia: ŠWS 8, ŠWS 9.

***Chrysopa formosa* Brauer, 1851**

Literature records for Serbia: Frivaldszky (1877), Mocsáry (1899), Petrik (1958), Devetak and Jakšić (2003).

Material examined: Southern and Eastern Serbia: SES 35 (27.VIII.2015).

***Chrysopa pallens* (Rambur, 1838)**

Literature records for Serbia: Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2015).

Material examined: Belgrade: BEL 1 (05.VIII.2015). Šumadija and Western Serbia: ŠWS 20 (11.VII.2015).

***Chrysopa gibeauxi* (Leraut, 1989)**

Literature records for Serbia: Canard and Thierry (2017), Devetak et al. (2019b).

Material examined: Šumadija and Western Serbia: ŠWS 9.

In the Tara National Park, close to the lake a male was found in coniferous forest with *Pinus* and *Picea* at the altitude 935 m.

***Apertochrysa flavifrons* (Brauer, 1851)**

Literature record for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019a).

Material examined: Vojvodina: VOJ 7. Southern and Eastern Serbia: SES 4, SES 7, SES 17, SES 23, SES 30, SES 38.

***Apertochrysa prasina* s.str. (Burmeister, 1839)**

(sensu Duelli and Henry 2022)

This species has only recently been redefined (Duelli and Henry 2022).

Material examined: Southern and Eastern Serbia: SES 8, SES 14, SES 16, SES 19, SES 21. Šumadija and Western Serbia: ŠWS 8.

***Apertochrysa ventralis* (Curtis, 1834)**

Material examined: Belgrade: BEL 1. Southern and Eastern Serbia: SES 9, SES 30, SES 31.

First record in Serbia.

***Cunctochrysa albolineata* (Killington, 1935)**

Literature records for Serbia: Aspöck et al. (1980), Devetak and Jakšić (2003).

Material examined: Southern and Eastern Serbia: SES 14, SES 31.

***Chrysoperla carnea* (Stephens, 1836) sensu stricto**

Literature records for Serbia: Devetak et al. (2019a, 2019b).

Material examined: Vojvodina: VOJ 7. Belgrade: BEL 1 (29.VIII.2016). Southern and Eastern Serbia: SES 1, SES 3, SES 9, SES 17, SES 19, SES 23, SES 30, SES 31, SES 32, SES 37 (11.XI.2015), SES 40.

***Chrysoperla lucasina* (Lacroix, 1912)**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019a, 2019b).

Material examined: Vojvodina: VOJ 7. Belgrade: BEL 1 (14.VIII.2015, 1.IX.2015, 29.VIII.2016). Southern and Eastern Serbia: SES 4, SES 5, SES 7, SES 8, SES 9, SES 14, SES 15, SES 17, SES 19, SES 23, SES 30, SES 34, SES 39. Šumadija and Western Serbia: ŠWS 1, ŠWS 7, ŠWS 8, ŠWS 9, ŠWS 10, ŠWS 11, ŠWS 15, ŠWS 16, ŠWS 17, ŠWS 18, ŠWS 19.

C. lucasina is one of the most widespread lacewing species in the country.

***Chrysoperla pallida* Henry, Brooks, Duelli and Johnson, 2002**

Literature records for Serbia: Devetak et al. (2019a).

Material examined: Vojvodina: VOJ 7. Belgrade: BEL 1 (25.VII.2015, 1.IX.2015, 22.-23.II.2016, 01.IV.2016). Southern and Eastern Serbia: SES 14, SES 17, SES 23, SES 28, SES 32, SES 40.

***Chrysoperla agilis* Henry, Brooks, Duelli and Johnson, 2003**

Literature records for Serbia: Devetak et al. (2019a).

Material examined: Vojvodina: VOJ 7. Belgrade: BEL 1 (14.VIII.2015). Southern and Eastern Serbia: SES 1, SES 14, SES 17, SES 23, SES 25, SES 30, SES 40.

***Chrysoperla mediterranea* (Hölzel, 1972)**

Material examined: Southern and Eastern Serbia: SES 23.

A male and two females were collected from the vegetation close to the Dojkinačka reka river.

First record in Serbia.

HEMEROBIIDAE

***Hemerobius humulinus* Linnaeus, 1758**

Literature records for Serbia: Guelmino (1996), Devetak and Jakšić (2003), Devetak et al. (2019a, 2019b), Podlesnik et al. (2019).

Material examined: Vojvodina: VOJ 6. Belgrade: BEL 1 (25.VII.2015). Southern and Eastern Serbia: SES 4, SES 5, SES 14, SES 20, SES 23, SES 24, SES 26. Šumadija and Western Serbia: ŠWS 2, ŠWS 3, ŠWS 4, ŠWS 5, ŠWS 6, ŠWS 7, ŠWS 8, ŠWS 11.

***Hemerobius simulans* Walker, 1853**

Literature records for Serbia: Devetak and Jakšić (2003), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 8.

***Hemerobius pini* Stephens, 1836**

Literature records for Serbia: Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 20. Šumadija and Western Serbia: ŠWS 7.

Hemerobius pini was collected in the Tara National Park in an alpine meadow with sporadic *Juniperus*, *Pinus*, *Picea*, *Acer* and *Salix* trees, at the altitude 997 m (Fig. 2).

***Hemerobius contumax* Tjeder, 1932**

Literature records for Serbia: Podlesnik et al. (2019).

Material examined: Šumadija and Western Serbia: ŠWS 12.

***Hemerobius nitidulus* Fabricius, 1777**

Material examined: Southern and Eastern Serbia: SES 22.

First record in Serbia.

***Hemerobius handschini* Tjeder, 1957**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 6, SES 7, SES 9, SES 14, SES 15, SES 24, SES 34, SES 39. Šumadija and Western Serbia: ŠWS 2, ŠWS 3, ŠWS 5, ŠWS 8, ŠWS 9, ŠWS 11.

***Hemerobius micans* Olivier, 1793**

Literature records for Serbia: Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2019b), Podlesnik et al. (2019).



Fig. 2: Predov Krst in the Tara National Park - alpine meadow with sporadic *Juniperus*, *Pinus*, *Picea*, *Acer* and *Salix* trees. Photo: D. Devetak.

Material examined: Southern and Eastern Serbia: SES 4, SES 5, SES 9, SES 14, SES 17, SES 20, SES 21, SES 23, SES 24, SES 30, SES 31, SES 32, SES 39. Šumadija and Western Serbia: ŠWS 2, ŠWS 3, ŠWS 4, ŠWS 5, ŠWS 6, ŠWS 7, ŠWS 8, ŠWS 9, ŠWS 10, ŠWS 15.

***Hemerobius gilvus* Stein, 1863**

Literature records for Serbia: Devetak and Jakšić (2003), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 5, SES 39.

***Hemerobius marginatus* Stephens, 1836**

Literature record for Serbia: Devetak and Jakšić (2003).

Material examined: Southern and Eastern Serbia: SES 17, SES 20, SES 30.

Hemerobius marginatus was collected in oak and beech forests with *Fagus*, *Acer*, *Crataegus*, *Tilia* and *Corylus* at altitudes 860-980 m.

***Wesmaelius quadrifasciatus* (Reuter, 1894)**

Literature records for Serbia: Podlesnik et al. (2019).

Material examined: Šumadija and Western Serbia: ŠWS 12.

***Symphorobius pygmaeus* (Rambur, 1842)**

Literature record for Serbia: Devetak and Jakšić (2003), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 35 (18.IX.2015), SES 39. Šumadija and Western Serbia: ŠWS 9, ŠWS 15.

***Symphorobius fuscescens* (Wallengren, 1863)**

Literature record for Serbia: Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Šumadija and Western Serbia: ŠWS 9.

***Megalomus tortricoides* Rambur, 1842**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 8 (02.-15.VI.2015), SES 10, SES 35 (18.IX.2015). Šumadija and Western Serbia: ŠWS 7, ŠWS 12.

***Megalomus tineoides* Rambur, 1842**

Literature records for Serbia: Podlesnik et al. (2019), Devetak et al. (2020).

Material examined: Southern and Eastern Serbia: SES 35 (18.IX.2015).

***Micromus variegatus* (Fabricius, 1793)**

Literature records for Serbia: Devetak (1992), Guelmino (1996), Devetak and Jakšić (2003), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 8, SES 28, SES 35 (18.IX.2015). Šumadija and Western Serbia: ŠWS 12.

***Micromus angulatus* (Stephens, 1836)**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Belgrade: BEL 1 (21.IX.2016). Šumadija and Western Serbia: ŠWS 2, ŠWS 8, ŠWS 12, ŠWS 15.

***Micromus lanosus* (Zelený, 1962)**

Literature records for Serbia: Devetak et al. (2019b), Podlesnik et al. (2019).

Material examined: Southern and Eastern Serbia: SES 4, SES 17, SES 19, SES 30, SES 31, SES 35 (18.IX.2015). Šumadija and Western Serbia: ŠWS 2, ŠWS 7, ŠWS 8, ŠWS 12.

SISYRIDAE

***Sisyra nigra* (Retzius, 1783)**

Literature records for Serbia: Guelmino (1996), Podlesnik et al. (2017), Devetak et al. (2019b).

Material examined: Šumadija and Western Serbia: ŠWS 2.

***Sisyra terminalis* Curtis, 1854**

Literature records for Serbia: Podlesnik et al. (2017).

Material examined: Southern and Eastern Serbia: SES 1 (Fig. 3), SES 3. Šumadija and Western Serbia: ŠWS 1.

Riparian vegetation is a typical habitat for Spongillaflies (along rivers: the Zapadna Morava river; the Danube – Fig. 3).

CONIOPTERYGIDAE

***Aleuropteryx loewii* Klapálek, 1894**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b).

Material examined: Southern and Eastern Serbia: SES 6. Šumadija and Western Serbia: ŠWS 9.

***Helicoconis lutea* (Wallengren, 1871)**

Literature records for Serbia: Devetak et al. (2019b).

Material examined: Šumadija and Western Serbia: ŠWS 9, ŠWS 11.



Fig. 3: Riparian vegetation along the Danube is habitat of *Sisyra terminalis* adults. Photo: D. Devetak.

***Helicoconis pseudolutea* Ohm, 1965**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b).
Material examined: Šumadija and Western Serbia: ŠWS 5, ŠWS 8.

***Coniopteryx borealis* Tjeder, 1930**

Literature records for Serbia: Devetak and Jakšić (2003).
Material examined: Šumadija and Western Serbia: ŠWS 5.

***Coniopteryx pygmaea* Enderlein, 1906**

(syn.: *Coniopteryx (C.) parthenia* (Navás and Marcet, 1910))
Literature records for Serbia: Devetak and Jakšić (2003).
Material examined: Southern and Eastern Serbia: SES 15, SES 24, SES 34.

***Coniopteryx tineiformis* Curtis, 1834**

Material examined: Southern and Eastern Serbia: SES 17.
First record in Serbia.

***Coniopteryx arcuata* Kis, 1965**

Literature records for Serbia: Devetak et al. (2019b).
Material examined: Šumadija and Western Serbia: ŠWS 4.

***Coniopteryx (Metaconiopteryx) esbenpeterseni* Tjeder, 1930**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b).
Material examined: Southern and Eastern Serbia: SES 15, SES 34. Šumadija and Western Serbia: ŠWS 5, ŠWS 8.

***Coniopteryx (Metaconiopteryx) lentiae* H. Aspöck and U. Aspöck, 1964**

Literature records for Serbia: Devetak et al. (2019b).
Material examined: Šumadija and Western Serbia: ŠWS 9.

***Conwentzia pineticola* Enderlein, 1905**

Literature records for Serbia: Devetak and Jakšić (2003), Devetak et al. (2019b).
Material examined: Šumadija and Western Serbia: ŠWS 11.

***Semidalis aleyrodiformis* (Stephens, 1836)**

Literature records for Serbia: Guelmino (1996), Devetak and Jakšić (2003), Devetak et al. (2019b).
Material examined: Šumadija and Western Serbia: ŠWS 2, ŠWS 5, ŠWS 6, ŠWS 8, ŠWS 10, ŠWS 11.

MANTISPIDAE

***Mantispa styriaca* (Poda, 1761)**

Literature records for Serbia: Devetak and Jakšić (2003).
Material examined: Southern and Eastern Serbia: SES 6, SES 39.

***Mantispa aphavexelte* U. Aspöck and H. Aspöck, 1994**

Literature records for Serbia: Devetak and Jakšić (2003).

Material examined: Southern and Eastern Serbia: SES 35 (18.IX.2015), SES 37 (19.IX.2015), SES 38, SES 39.

***Mantispilla perla* (Pallas, 1772)**

Material examined: Southern and Eastern Serbia: SES 18

On Vidlič Mountain, the habitat of this species was dry rocky grassland with sporadic *Ulmus*, *Carpinus orientalis* and *Crataegus pentagyna* trees or bushes (Fig. 4). On one isolated *Ulmus* tree more than 50 individuals of *M. perla* were observed.

First record in Serbia.

Suborder Myrmeleontiformia

MYRMELEONTIDAE

***Myrmecaelurus trigrammus* (Pallas, 1771)**

Literature records for Serbia: Frivaldszky (1877), Biró (1885), Mocsáry (1899), Grozdanić and Stevanović (1969), Mitić and Gradojević (1983), Stevanović and Bjelić (1985), Devetak (1992), Devetak et al. (2019a), Ivajnsič and Devetak (2020).



Fig. 4. A dry rocky grassland with sporadic *Ulmus*, *Carpinus orientalis* and *Crataegus pentagyna* trees, Vidlič Mountain. Photo: D. Devetak.

Material examined: Vojvodina: VOJ 1, VOJ 2, VOJ 3, VOJ 4, VOJ 5. Southern and Eastern Serbia: SES 37 (04.VII.2015), SES 45.

In Deliblato Sands (=Deliblatska peščara), *M. trigrammus* adults appeared en masse in fragments of dry meadows (Fig. 5).

***Myrmeleon formicarius* Linnaeus, 1767**

Literature records for Serbia: Petrik (1958), Grozdanić and Stevanović (1969), Stevanović and Bjelić (1985), Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2019a, 2019b). Petrik (1958) listed this species in Deliblato sands, but it was impossible to identify larval antlions at the specific level in his time.

Material examined: Vojvodina: VOJ 5. Southern and Eastern Serbia: SES 5, SES 8, SES 24, SES 42. Šumadija and Western Serbia: ŠWS 8, ŠWS 14 (8.VII.2015), ŠWS 20 (11.VII.2015).

***Myrmeleon inconspicuus* Rambur, 1842**

Literature records for Serbia: Grozdanić and Stevanović (1969), Stevanović and Bjelić (1985),

Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2019a), Ivajnskić and Devetak (2020).



Fig. 5: Dry meadows in Deliblato sands. Photo: D. Devetak.

Material examined: Vojvodina: VOJ 2.

In Deliblato sands *M. inconspicuus* larvae occurred in fragments of dry meadows (Fig. 5).

***Euroleon nostras* (Geoffroy in Fourcroy, 1785)**

Literature records for Serbia: Živojinović (1950), Grozdanić and Stevanović (1969), Stevanović and Bjelić (1985), Devetak (1992), Devetak and Jakšić (2003), Devetak et al. (2019a, 2019b), Ivajnsič and Devetak (2020).

Material examined: Southern and Eastern Serbia: SES 6. Šumadija and Western Serbia: ŠWS 4, ŠWS 5, ŠWS 8, ŠWS 11.

***Neuroleon microstenus* (McLachlan, 1898)**

Literature records for Serbia: Devetak 1992: Serbia.

Material examined: Southern and Eastern Serbia: SES 38.

A female of *N. microstenus* was attracted by light trap. It is a rare species in Serbia.

***Distoleon tetragrammicus* (Fabricius, 1798)**

Literature records for Serbia: Frivaldszky (1877), Biró (1885), Devetak (1992), Guelmino (1996), Devetak and Jakšić (2003), Ivajnsič and Devetak (2020).

Material examined: Southern and Eastern Serbia: SES 14, SES 33, SES 43.

***Creoleon plumbeus* (Olivier, 1811)**

Literature records for Serbia: Frivaldszky (1877), Biró (1885), Mocsáry (1899), Grozdanić and Stevanović (1969), Stevanović and Bjelić (1985), Devetak et al. (2019a), Ivajnsič and Devetak (2020).

Material examined: Vojvodina: VOJ 2.

ASCALAPHIDAE

***Libelloides lacteus* (Brullé, 1832)**

Literature records for Serbia: Devetak and Jakšić (2003), Petrović (2013), Parenta et al. (2022).

Material examined: Southern and Eastern Serbia: SES 8 (29. V. 2015; Fig. 6), SES 13, SES 44.

***Libelloides macaronius* (Scopoli, 1763)**

Literature records for Serbia: Devetak (1992), Devetak and Jakšić (2003), Parenta et al. (2022).

Material examined: Southern and Eastern Serbia: SES 2, SES 6, SES 8, SES 10, SES 19, SES 20, SES 26, SES 27, SES 29, SES 37 (04.VII.2015), SES 46, SES 47, SES 48. Šumadija and Western Serbia: ŠWS 14 (26.VI.2016), ŠWS 16, ŠWS 20, ŠWS 21, ŠWS 22, ŠWS 23.



Fig. 6. Limestone dry clearing surrounded by *Fagetum submontanum carpinetosum betuli* and *Fago – Aceri intermedii – Coryletum colurnae* at Crni Vrh 1046-1115 m, Vidlič Mountain. Photo: A. Nahirnić Beshkova.

Discussion

Here we report four snakefly and 65 lacewing species collected in Serbia in the period 2015-2016. Nine species are reported from the country for the first time.

Some older reports on the occurrence of a few species in Serbia are doubtful. Antlions are an example. Some authors, e.g., Petrik (1958) listed only one species (*M. formicarius*) for the Deliblato sands, but in his time a review literature on antlion larval identification did not exist.

Another example is green lacewing genus *Apertochrysa*. Due to the lack of the knowledge of taxonomy of the genus in the past, listing some species for the country was incorrect (e.g., Devetak et al. 2019b). Some specimens of the newly recognized

species (Ap1, Ap2, Ap3) are impossible to identify without live coloration (for explanation, see Duelli and Henry 2022).

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Autor(en)/Author(s): Devetak Dusan, Jaksic Predrag, Nahirnic-Beshkova Ana, Janzekovic Franc, Klenovsek Tina, Podlesnik Jan, Klokocovnik Vesna

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