ANNALS OF THE UPPER SILESIAN MUSEUM IN BYTOM
ENTOMOLOGY
Vol. **27 (online 001)**: 1–39 ISSN 0867-1966, eISSN 2544-039X (online) Bytom, 3.10.2018

Roland Dobosz[1], Alexi Popov[2]

New data about the distribution of Neuropterida in Bulgaria and Romania

http://doi.org/10.5281/zenodo.1443230

[1] Upper Silesian Museum, Department of Natural History, pl. Jana III Sobieskiego 2, 41-902 Bytom, Poland
e-mail: dobosz@muzeum.bytom.pl

[2] National Museum of Natural History, Tsar Osvoboditel Blvd 1, 1000 Sofia, Bulgaria
e-mail: alpopov@nmnhs.com

Abstract: The collections of neuropterid orders from Bulgaria and Romania preserved in museums in Poland (Upper Silesian Museum in Bytom and Museum and Institute of Zoology in Warsaw) are identified. Faunistic information on 89 species is reported: 77 species from Bulgaria and 37 species from Romania (25 species from both countries). *Coniopteryx* (*Xeroconiopteryx*) *atlasensis*, *Megalomus tineoides*, *Cunctochrysa cosmia* and *Neuroleon assimilis* are new species for the fauna of Bulgaria. These first records shift the range borders of three species with 190 to 700 km northwards. Easternmost localities of *Phaeostigma* (*Phaeostigma*) *pilicollis* and *Nothochrysa capitata* and northernmost locality of *Neuroleon assimilis* are registered. The new localities outline the borders of the ranges of 20 species. Very rare species are *Phaeostigma* (*Pontoraphidia*) *rhodopicum* (Balkan endemic species), *Libelloides lacteus* (a single population in Romania), *Coniopteryx* (*Metaconiopteryx*) *lentiae* (in Romania), *Coniopteryx* (*Holoconiopteryx*) *haematica* and *Sagittalata perla* (both in Bulgaria), and *Nedroledon anatolicus* (in both countries).

Key words: Raphidioptera, Megaloptera, Neuroptera, faunistics, Bulgaria, Romania.

INTRODUCTION

The fauna of all three neuropterid orders of Romania and Bulgaria is well explored and the species diversity is almost fully known.

The knowledge of the three orders in Romania is mainly due to the activity for many years of Prof. Béla Kis (1924-2003). The excellent monograph of Fauna of Romania (Kis *et al.* 1970), almost entirely compiled by him, is one of the first modern works on Neuroptera in Europe. It contains original drawings, identification keys, morphological descriptions and maps of the localities of each species and has not lost its significance to this day. The following taxa have been reported as new for the fauna of Romania during the next nearly half a century: the families Berothidae by Kis (1992) and Nevrorthidae by Sziráki (2008) as well

Libelloides lacteus by Beloescu (1973), 4 species of Myrmeleontidae by Kis & Bobîrnac (1971), Kis (1972) and Sziráki (2000), and 9 species of Chrysopidae by Paulian (2002) and Monserrat *et al*. (2014). Detailed data on the distribution of the species of Raphidioptera in Romania were published by Kis (1984).

The species diversity in Bulgaria is also generally known and the distribution in this country is better studied in Southern Bulgaria. The results are systematized by families. Summarized information was published for Megaloptera (Sialidae) by Popov (1981), Raphidioptera (Raphidiidae and Inocelliidae) by Aspöck *et al.* (1991), Coniopterygidae by Popov (1983, 1986a), Hemerobiidae by Popov (1986b), Chrysopidae by Popov (1990a), Myrmeleontidae by Popov (1996) and for the other eight families of Neuroptera by Popov (2007). Additional new species for the country were reported in Sisyridae by Rausch and Weissmair (2007), in Hemerobiidae by Popov (1991, 2002a), in Chrysopidae by Popov (1991, 2002a), Thierry *et al.* (1998) and Thierry & Canard (2018), and in Myrmeleontidae by Kačírek (2013). Results of regional faunistic investigations in some parts of Bulgaria have been published on Central Stara Planina Range, Vitosha Mts., Rila Mts., Kresna Gorge, Eastern Rhodopes Mts., Black Sea Coast.

Entomologists from Poland in the second half of the 20th century and the beginning of the 21st century were and are interested in the fauna of Bulgaria and, to a lesser extent, that of Romania. They have been looking for xerothermophilous Mediterranean species in Bulgaria which are not found among the Eurosiberian and Central European fauna prevailing in Poland. During the communist regime, it was almost the only chance to collect in such habitats. Despite the travel opportunities around the world that arose after the collapse of communism, the collector trips of Polish zoologists to Bulgaria have increased many times. Some entomologists organized special visits to collect material; others collected on their way to Greece or Turkey; and others, during a tourist holiday. Although they are experts on different insect groups, a large number of entomologists have also collected Neuropterida. So, quite rich collections were created in Poland, mainly in the Upper Silesian Museum in Bytom. The aim of this paper is to publish data on all specimens of Neuroptera, Raphidioptera and Megaloptera from Romania and Bulgaria kept in Polish museums. Among them, there are both confirmatory records of previously published localities of species as well as new data on species and localities that are of faunistic interest.

MATERIAL AND METHODS

The collections of Neuropterida from Romania and Bulgaria, preserved in museum collections in Poland, numbered 1371 specimens. Most of them are kept in the Upper Silesian Museum in Bytom (1346 specimens); and the remaining 25 specimens, in the Museum and Institute of Zoology at the Polish Academy of Sciences in Warsaw. In addition, four specimens from the collections of the National Museum of Natural History at the Bulgarian Academy of Sciences in Sofia of species reported here for the first time for Bulgaria are included.

The material has been collected in both countries for more than 50 years between 1959 and 2015 from 29 collectors from Poland. Among them, 27 entomologists have provided their samples to the Museum in Bytom; and two entomologists, to the Museum in Warsaw. Very active from the collectors was the first author, who collected 1019 specimens or three-quarters of the entire material, with the highest number of specimens in each of the countries. Significant are the samples of Janusz Nowacki and Marek Bunalski (149 specimens), Tomasz Rynarzewski (47 specimens from Obzor in Bulgaria) and Tomasz Kwapniewski (31 specimens from Rimetea in Romania). The interest of Polish collectors was much more focused on Bulgaria than on Romania: 26 researchers collected 1233 specimens in Bulgaria;

and 7 researchers, 138 specimens in Romania. The preservation of the material in the collections of the Museum and Institute of Zoology in Warsaw and the National Museum of Natural History in Sofia is given in each sample in the systematic part. The lack of indication about the museum collection means that the specimens are kept in the collections of the Upper Silesian Museum in Bytom. Abbreviations of the names of the collectors and of the museum collections are used in the systematic part as follows:

A & AN – leg. Anna Maryańska-Nadachowska & Adam Nadachowski
DT – leg. Dariusz Tarnawski
EG – leg. Elżbieta Głowacka
HL – leg. Hristo Lukov
JG – leg. Julius Ganev
JK – leg. Jarosław Kania
JKu – leg. Jacek Kurzawa
JN – leg. Janusz Nowacki
JN & MBu – leg. Janusz Nowacki & Marek Bunalski
JSz – leg. Jacek Szwedo
KD – leg. Krzysztof Dobosz
KG – leg. Karol Glimos
LK – leg. Lech Kruszelnicki
ŁP – leg. Łukasz Przybyłowicz
MB – leg. Marian Bielewicz
MIZW – Museum and Institute of Zoology, Warsaw (Polish Academy of Sciences)
MS – leg. Mirosław Soszyński
NMNHS – National Museum of Natural History, Sofia (Bulgarian Academy of Sciences)
RB – leg. Regina Bańkowska
RBi – leg. Ryszard Bielawski
RD – leg. Roland Dobosz
RK – leg. Roman Królik
RR – leg. Rafał Ruta
RR & RR – leg. Rafał Ruta & Robert Rosa
RSz – leg. Ryszard Szadziewski
RZ – leg. Roman Zamorski
SS – leg. Stefan Sobczak
TK – leg. Tomasz Kwapniewski
TR – leg. Tomasz Rynarzewski
WŻ – leg. Waldemar Żyła
ZCh – leg. Zbigniew Chrul
ZM – leg. Zbigniew Mocarski

The localities in both countries are given with their current names. For Romania, they are grouped by administrative regions; and for Bulgaria, by geographical regions. The first records of species for the geographical regions of Bulgaria and for the regions and districts

of Romania are registered. The habitats in which each species occurs are mentioned, and the distribution, including the vertical distribution, in the country concerned is outlined in general terms. Ecological information about Bulgaria is based on personal observations and on entire material from this country preserved in the National Museum of Natural History in Sofia. For rare species, information about the localities known so far in the country concerned is given. The borders of the range, crossing the two countries, and their changes on the basis of the material in museums in Poland are specified. Information on the species ranges is updated according to the literature after Aspöck *et al.* (2001). After consultation with Prof. Ulrike Aspöck and Prof. Horst Aspöck (Vienna), the families are arranged in the systematic order according to Wang *et al.* (2017).

RESULTS

List of species

Raphidioptera

Raphidiidae

Phaeostigma* (*Phaeostigma*) *pilicollis (Stein, 1863)

Bulgaria. Rhodopes Mts.: Teshel, S of Devin, 2♂♂, 9.6.2010, A & AN. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º51', 2♀♀, 6.5.2005, RD. Eastern Stara Planina Range: Banya, 39 km NE of Burgas, 360m, N 42º46', E 27º 47', 4♂♂, 23.5.2005, RD.

Phaeostigma pilicollis occurs in South Bulgaria and inhabits mostly deciduous vegetation and rarely coniferous trees. The localities in Bulgaria are mapped by Aspöck *et al.* (1991). First record for Thracian Lowland. Banya is the easternmost locality in the species range. The eastern range border is outlined by Banya (present material) and Yenice in European Turkey (Dobosz 2007). The northern border of the range runs through Llogara Pass in Albania (Devetak & Rausch 2016), Ohrid (Aspöck *et al.* 1980: map 14) and Rudine Plateau (Devetak *et al.* 2015b) in Macedonia, Beledie Han site in Western Stara Planina Range (unpublished material), Panicherevo (present material), Karandila site in Eastern Stara Planina Range (Aspöck & Aspöck 1966) and Banya (present material) in Bulgaria. Range: Southern Albania, Greece, Macedonia, Southern Bulgaria and European Turkey.

Phaeostigma* (*Pontoraphidia*) *rhodopicum (Klapálek, 1894)

Bulgaria. Rhodopes Mts.: Asenovgrad, 1♀, 8.6.1980, EG; Bachkovo, S of Asenovgrad, 1♂, 7.6.1980, EG.

Type locality according to the original description: along the road from Philipopol [now: Plovdiv] to the monastery of Bela Cerkva [correct: Byala Cherkva] (Klapálek 1894). Type locality (restricted): Studenec [correct: Studenets] (Bartoš 1967) and not Dobralak (as in Popov 1993). The localities known so far in Bulgaria are: the type locality (Aspöck *et al.* 1991, Vol. 1: 227, Vol. 2: 13) and its environs between Markovo and Byala Cherkva (correct: between above Markovo and Tsar Kaloyan because only this area is situated at an altitude of 600-800 m mentioned by Aspöck *et al.* 1991, Vol. 1: 227) as well as Bachkovo Monastery (Aspöck *et al.* 1991, Vol. 2: 22) and Hvoyna (Popov 1998). All four localities in Bulgaria are closely located in Northern Rhodopes Mts. and the maximum distance between them is only 22 km (between Asenovgrad and Hvoyna). This very rare in its entire range species

inhabits in Bulgaria xerothermic habitats with *Quercus* and *Carpinus* trees and especially with *Juniperus* shrubs. Asenovgrad is situated on the northern border of the species range which runs along the northern slopes of the Rhodopes Mts. *Phaeostigma rhodopicum* is a Balkan endemic species with a range in the eastern part of the Balkan Peninsula: Rhodopes Mts. in Bulgaria and Yenice and İğneada in European Turkey (Dobosz 2007).

Dichrostigma flavipes (Stein, 1863)

Romania. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♀, 27.5.2002, RD; Tepşenari, 12 km SE of Râmnicu Vâlcea, Vâlcea District, 1000 m, N 45º02', E 24º29', 2♂♂, 5.5.2005, RD.

This is the most common species of Raphidioptera in Romania. It occurs in all parts of the country except Dobrogea (Kis 1984). *Dichrostigma flavipes* inhabits more deciduous than coniferous vegetation and has been found mainly on shrubs and less on trees. Range: Central Europe, Northern Italy, Balkan Peninsula, Romania, Moldova, Ukraine and the southern part of the European Russia.

Raphidia (***Raphidia***) ***ophiopsis*** Linnaeus, 1758

Romania. Oltenia: Drobeta – Turnu Severin, Mehedinţi District, N 44º38', E 22º37', 2♀♀, 6.6.2001, RD.

Widely distributed species in Romania. It occurs on coniferous trees with an obvious preference for species of *Pinus*. Range: Northern and Central Europe (without Western Europe), Balkan Peninsula and Northern Asia eastwards to Eastern Siberia.

Raphidia (***Raphidia***) ***beieri*** H. Aspöck & U. Aspöck, 1964

Bulgaria. Struma Valley: 2 km SW of Melnik, 319 m, N 41º31', E 23º23', 1♂, 5.5.2008, RK. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 2♂♂, 1♀, 23-24.5.2005, RD.

Raphidia beieri occurs in Southwestern Bulgaria on deciduous vegetation. The localities in Bulgaria are mapped by Aspöck *et al.* (1991). First record for Northern Bulgaria. The northwestern border of the range runs through Bulgaria. Range: Macedonia, Northern Greece, Southwestern Bulgaria, Eastern Romania, Moldova, Ukraine and Northwestern Anatolia.

Megaloptera

Sialidae

Sialis fuliginosa Pictet, 1836

Bulgaria. Rhodopes Mts.: Smolyan, 2♂♂, 29.5.1959, RB, coll. MIZW.

Common species in Bulgaria along flowing water with preference for fast-flowing streams and rivers and rare occurrence in slow-moving water and glacial lakes up to 2250 m a.s.l. The southern border of the range is outlined by the line between Serra de Estrela Mts. in Guarda Province in Northern Portugal (Badano *et al.* 2011), Córdoba Province in Southern Spain (Monserrat 2014), Calabria Province in Southern Italy (Letardi 2017), Fitore in Southern Albania (Dvořák 2016), Kochani in Eastern Macedonia (Devetak *et al.* 2016), Popovo Ezero Lake in Pirin Mts. and Smolyanski Ezera Lakes (Popov 1981), and Smolyan (present material) in Southern Bulgaria. Range: Europe and Siberia.

Neuroptera

Coniopterygidae

Aleuropteryx loewii Klapálek, 1894

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 3♂♂, 12♀♀, 3.6.2000, RD.

This species is narrowly associated with the conifers of the genus *Pinus* and has been found in Bulgaria only on *Pinus sylvestris* and *Pinus nigra* on sunny slopes in the lower parts of the mountains between 650 and 1050 m a.s.l. It is a rare species in Bulgaria known only from Northern Pirin Mts. (Popov 1983) and Yordankino in Western Stara Planina Range (Popov 1986a). First record for Northern Bulgaria. Range: Central and Southern Europe and Anatolia.

Aleuropteryx umbrata Zelený, 1964

Romania. Oltenia: Brezoi, Vâlcea District, N 45º21', E 24º15', 1♀, 27.6.2002, RD.

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, black light, 1♂, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 9♂♂, 4♀♀, 31.7.2013, RD.

Aleuropteryx umbrata is a rare species in both countries found on *Pinus* in xerothermic habitats in southernmost parts of Romania (Banat, Oltenia and Dobrogea according to Kis 1964, 1975, as *Aleuropteryx ornata*) and on *Juniperus excelsa* and rarely on *Quercus* in Kresna Gorge (Popov 1983) and Belogradchik (Popov 1986a) in Western Bulgaria up to 500 m a.s.l. Brezoi is located in Transylvanian Alps whereas all known localities in Romania so far lie south of this mountain. The following localities outline the northern range border of the species: Tihany (Sziráki *et al*. 1992) and Csobánka (Sziráki 1996) in Hungary, Brezoi in Romania (present material), Chişinău in Moldova (Zelený 1964a) and Crimea in Ukraine (Dorokhova 1987). Range: Balkan Peninsula, adjacent parts of Hungary, Romania, Moldova and Ukraine as well Anatolia, Israel and Egypt.

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

Romania. Transylvania: Tărtărău Pass between Şureanu Mts. and Lotrului Mts., Alba District, N 45º28', E 23º38', on *Picea abies*, 1♂, 1 ♀, 27.6.2002, RD. Oltenia: Brezoi, Vâlcea District, N 45º21', E 24º15', 1♀, 27.6.2002, RD.

This is a mountain species occurring in Romania on coniferous trees, mainly on *Picea abies*, up to 1500 m a.s.l. Range: Northern and Central Europe, Italy, Slovenia, Bulgaria, Northern Asia eastwards to Sakha Republic (Yakutia) and Northwestern North America.

Helicoconis (***Ohmopteryx***) ***pseudolutea*** Ohm, 1965

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 1♂, 1♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 2♂♂, 1♀, 31.7.2013, RD.

Helicoconis pseudolutea inhabits in Bulgaria xerothermic habitats in the oak belt. It is found on *Juniperus excelsa* and *Quercus* up to 1300 m a.s.l. (mostly below 500 m). Range: Southern Europe and adjacent parts of Central Europe as well Northwestern Africa and Western Asia eastwards to Iran.

Monserrat (2011) designated a neotype of *Helicoconis interna* (Navás, 1911) and synonymized *Helicoconis pseudolutea* with this species. The type specimen of the former is lost and three species of *Helicoconis* occur in the area of the type locality (Granada Province in Spain) among which *Helicoconis pseudolutea* is the most common. Earlier, Aspöck *et al.* (2001) treated *Helicoconis interna* as nomen dubium. Because the species belonging of the last cannot be determined, we consider as current valid name of this species the specific well recognizable *Helicoconis pseudolutea* (as in Aspöck *et al.* 2001) and not *Helicoconis interna* (as in Monserrat 2011).

Coniopteryx* (*Xeroconiopteryx*) *atlasensis Meinander, 1963

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, black light, 2♂♂, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 1♂, 31.7.2013, RD.

Fig. 1. Distribution of *Coniopteryx atlasensis* (Map made with Natural Earth).

New species for the fauna of Bulgaria. *Coniopteryx atlasensis* inhabits most likely xerophilous herbaceous vegetation (Monserrat 2016). In Morocco, it is collected on *Tamarix* and *Juniperus* (Meinander 1963) which occur also in the localities in Bulgaria. Furthermore, this species is found on *Pinus*, *Quercus*, *Populus*, *Ulmus* and *Pistacia* in Iberian Peninsula (Monserrat 2016) as well occurring in pseudomaquis in Struma Valley in Bulgaria. Both localities in Bulgaria shift the northern border of the species range by 700 km

northwards. Range (Fig. 1): Madeira, Canary Islands (La Palma, Fuerteventura), Morocco, Portugal, Spain, Bulgaria, Greece (Crete), Anatolia, Azerbaijan, Iran, Afghanistan, Tajikistan, Uzbekistan, Kazakhstan. Monserrat (2016) reported Yemen in the range of the species. This statement is not supported by any published locality. Therefore, we do not believe that the range covers also this country and an occurrence in Yemen is not shown in Fig. 1.

Coniopteryx* (*Coniopteryx*) *borealis Tjeder, 1930

Romania. Oltenia: Rogova, Mehedinți District, N 44º28', E 22º48', on *Fagus*, 1♂, 2.6.2000, RD.

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º 9'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 8♂♂, 7♀♀, 2.8.2013, 1♂, 5♀♀, 3.8.2013, RD; Lozenitsa, SW of Melnik, 400 m a.s.l., N 41º30' 40.8", E 23º22'36.5", netting on roadside vegetation, on *Malus*, 1♂, 1.8.2013, RD.

Common in Romania and rare species in Bulgaria known from only two localities in the southeastern part of the latter country: Izgrev near Tsarevo (Popov 1977) and Krumovgrad (Popov 1983). This species inhabits in both countries deciduous trees (*Quercus*, *Carpinus*, *Pyrus sativa*) and shrubs (*Prunus spinosa*, *Corylus avellana*) in lowlands up to 800 m a.s.l. First record for Struma Valley. Melnik is situated on the southern border of the species range. Range: Europe, Northwestern Africa, Anatolia, Transcaucasia and Iran.

Coniopteryx* (*Coniopteryx*) *tineiformis Curtis, 1834

Romania. Oltenia: Rogova, Mehedinți District, N 44º28', E 22º48', on *Fagus*, 1♂, 2.6.2000, RD.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♂, 28.6.2000, RD; Central Stara Planina Range: N of Shipka Pass, 18 km N of Kazanlak, 1080 m a.s.l., N 42º46', E 25º19', 1♂, 6.5.2005, RD.

Coniopteryx tineiformis is a mountain species occurring in the beech belt of both countries. It inhabits there predominantly *Fagus sylvatica* as well as other deciduous trees and shrubs between 900 and 1400 m a.s.l. and is found rarely on coniferous trees in Romania. First records for Oltenia and Western Stara Planina Range. Shipka Pass is situated on the southern range border of the species. Range: North America, Europe and Anatolia.

Coniopteryx* (*Holoconiopteryx*) *haematica McLachlan, 1868

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º 09'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 1♂, 1♀, 2.8.2013, RD.

Only one specimen of this species is known so far from Bulgaria, namely from Karandila site in Eastern Stara Planina Range (Popov 1986a) collected on *Quercus* at 1000 m a.s.l. First record for Struma Valley. Range: Central and Southern Europe, Northwestern Africa, Anatolia and Cyprus.

Coniopteryx* (*Holoconiopteryx*) *drammonti Rousset, 1964

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 4 ♂♂, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 18♂♂, 4♀♀, 31.7.2013, RD.

This is a thermophilic species inhabiting in Bulgaria *Pinus nigra* in April and later various deciduous trees (*Carpinus orientalis*, *Quercus*, *Malus domestica*, *Fagus sylvatica*) and shrubs (*Crataegus*) up to 1000 m a.s.l. (mainly below 500 m). Range: Southern Europe, Northwestern Africa, Anatolia, Georgia and Iran.

Coniopteryx* (*Metaconiopteryx*) *arcuata Kis, 1965

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º 09'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 8♂♂, 1♀, 2.8.2013, 1♂, 3.8.2013, RD; Melnik, 400 m a.s.l., N 41º31'22.2", E 23º23'30.9", netting on roadside vegetation, 1♂, 1.8.2013, RD; Lozenitsa, SW of Melnik, 400 m a.s.l., N 41º30' 40.8", E 23º22'36.5", roadside vegetation, on *Malus*, 2♂♂, 1.8.2013, RD.

Coniopteryx arcuata occurs in Bulgaria mainly on *Quercus* and rarely on other deciduous trees (*Carpinus orientalis*, *Acer campestre*, *Prunus*) and shrubs (*Alnus glutinosa*) as well as on *Pinus nigra* up to 1000 m a.s.l. (mostly up to 500 m). The localities in Sandanski–Petrich kettle (Lozenitsa and Melnik) are situated on the southern border of the so far known part of the species range. Range: Southern Europe, Northwestern Africa and Anatolia.

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

Romania. Oltenia: Motru Sec, 35 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 3♂♂, 9♀♀, 27.5.2002, RD.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♂, 28.6.2000, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m a.s.l., N 43º 29', E 26º39', 2♂♂, 10♀♀, 23-24.5.2005, RD. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 4♂♂, 2♀♀, 3.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 2♂♂, 11♀♀, 31.7.2013, RD; Melnik, 400 m a.s.l., N 41º31'22.2", E 23º23'30.9", netting on roadside vegetation, 1♂, netting on roadside vegetation, *Hedera* and deciduous trees, 4♂♂, 1.8.2013, RD; Lozenitsa, SW of Melnik, 400 m a.s.l., N 41º30'40.8", E 23º22'36.5", netting on roadside vegetation, on *Malus*, 4♂♂, 1.8.2013, RD.

Common species in both countries up to 850 m on a broad range of decidous trees and shrubs and very rarely found on conifers. First records for Gorj District and Northeastern Bulgaria. Range: Europe, Anatolia and Transcaucasia.

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

Romania. Oltenia: Motru Sec, 35 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 3♀♀, 27.5.2002, RD.

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 1♂, 31.7.2013, RD.

Only two specimens from Cluj District in Transylvania (Kis 1965a, Kis *et al*. 1970) were known so far of this very rare species in Romania. The species is not so rare in Bulgaria because of its Mediterranean origin. It inhabits deciduous trees (*Quercus*, *Carpinus orientalis*) and shrubs (*Corylus avellana*) up to 500 m mainly in Southern Bulgaria. First records for Oltenia and in Romania south of the Carpathians as well as for Struma Valley. Range: Central and Southern Europe and Southwestern Asia eastwards to Iran.

Coniopteryx sp.

Romania. Oltenia: Rogova, Mehedinți District, N 44º28', E 22º48', on *Fagus*, 1♀, 2.6.2000, RD.

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º 43', E 22º 36', 2 ♀♀, 3.6.2000, RD. Central Stara Planina Range: Shipka Pass, 15 km N of Kazanlak, 1306 m a.s.l., N 42º 45', E 25º 20', 2 ♀♀, 26.6.2002, RD. Struma Valley: Kresna Gorge, N of Kresna, 200 m a.s.l., N 41º 45' 36.5", E 23º 09' 20.6", xerothermic meadow on the Struma River bank, netting on deciduous trees, 20 ♀♀, black light, 4 ♀♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m a.s.l., N 41º 32' 25.7", E 23º 25' 33.5", xerothermic meadow, netting, 2 ♀♀, 31.7.2013, RD.

Conwentzia pineticola Enderlein, 1905

Romania. Transylvania: Tărtărău Pass between Şureanu Mts. and Lotrului Mts., Alba District, N 45º28', E 23º38', 1♀, 27.6.2002, RD.

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 2♀♀, 31.7.2013, RD.

The female from Romania was collected in a pure coniferous forest at 1600-1700 m a.s.l. and the females from Bulgaria in a deciduous habitat free of conifers. Nevertheless, all females belong to *Conwentzia pineticola* according to the number of antennal segments.

Common species on coniferous trees in both countries. In Romania, it inhabits the coniferous belt in the mountains up to 2000 m a.s.l. and coniferous plantations in lower altitudes. In Bulgaria, it occurs in the mountains up to 1650 m and has been rarely found in lowlands below 950 m. It inhabits in this country all autochthonous and the main introduced species of Pinaceae as well *Juniperus excelsa* showing a clear preference for *Picea* and *Pinus*. Range: Europe, Northern Asia and North America.

Semidalis aleyrodiformis (Stephens, 1836)

Romania. Oltenia: Rogova, Mehedinți District, N 44º28', E 22º48', on *Fagus*, 1♀, 2.6.2000, RD; Motru Sec, 35 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 2♀♀, 27.5.2002, RD.

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 1♀, 3.6.2000, RD. Struma Valley: Karlanovo, NE of Melnik, 600 m a.s.l., N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 7♂♂, 12♀♀, 31.7.2013, RD. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m a.s.l., N 42º36', E 25º51', 1♂, 1♀, 6.5.2005, RD.

Very common species in both countries up to 1300 m a.s.l. inhabiting in mass various deciduous trees and shrubs, often occurring on *Juniperus excelsa* and rarely found on *Pinus*. Range: Europe, Northern Africa, Asia.

Osmylidae

Osmylus fulvicephalus (Scopoli, 1763)

Bulgaria. Rhodopes Mts.: Yagodina, S of Devin, 1100 m, 1♂, 17.7.2002, JN & MBu.

Osmylus fulvicephalus is a very common species in lowlands and low parts of the mountains in Bulgaria occurring along the banks of brooks and rivers overgrown with

riparian shrubs, *Salix*, *Ulmus* and other deciduous trees up to 1700 m a.s.l. (mostly below 1100 m). The localities in Bulgaria are mapped by Popov (2007). Range: Europe except its northernmost parts as well Anatolia.

Dilaridae

Dilar turcicus Hagen, 1858

Bulgaria. Struma Valley: Mt. Kozhuh (Rupite), NE of Petrich, 1♂, 1-5.6.1998, JN & MBu. Black Sea Coast: Sozopol, N 42º22', E 27º43', 2♀♀, 13.7.2004, RD.

This species is distributed in isolated areas in Southern Bulgaria and on the northern slopes of Stara Planina Range up to 1200 m a.s.l. (mainly below 700 m) on herbaceous vegetation in open habitats with deciduous trees and shrubs. The localities in Bulgaria are mapped by Popov (2007). First record for the Black Sea Coast. The northern range border of the family Dilaridae runs along Stara Planina Range (Popov 2007: Fig. 4). Range: Balkan Peninsula, Western Anatolia, Crimea in Ukraine and Krasnodar Province and most likely Dagestan in Russia.

Berothidae

Isoscelipteron fulvum Costa, 1863

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♂, 29.7.2013, netting, 1♂, 1♀, 31.7.2013, RD; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, at light, 1♂, 1.8.2013, RD. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 6.7.1997, TR.

In Bulgaria, this species occurs in Struma Valley, Eastern Rhodopes Mts. and on the Black Sea Coast, i.e. in some of the hottest parts of this country. It inhabits typical pseudomaquis in arid areas with scattered oak trees up to 800 m a.s.l. (usually below 400 m). The localities in Bulgaria are mapped by Popov (2007). The northern border of the range of the family Berothidae passes through Kresna Gorge (Popov 2001) and Canaraua Fetii in Dobrogea in Romania (Kis 1992). Range: Southern Italy, southern and eastern parts of the Balkan Peninsula and Western Asia from Anatolia to Iran.

Mantispidae

Mantispa styriaca (Poda, 1761)

Romania. Transylvania: Rimetea, Alba District, 1♂, 3♀♀, 11-17.7.2015, TK.

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♂, 29.7.2013, RD.

Mantispa styriaca is a rare species inhabiting meadows and open habitats in lowlands of both countries. In Romania, it is reported so far from Băile Herculane in Banat, and Cluj – Napoca and Sibiu Guşteriţa in Transylvania (Kis *et al*. 1970), Măcin Mts. (Skolka *et al.* 2007) and Danube Delta (Anonymous 2014) in Dobrogea and Crăciunel in Transylvania (Tăuşan *et al.* 2018) where it also occurs on shrubs and trees on the edge of deciduous forests and orchards. In Bulgaria, it is known from Stara Zagora in Thracian Lowland (Buresch 1940), the surroundings of Sofia (Popov 1990b), Kresna Gorge (Popov 2001) and Vidin in Danube

Plain (Popov 2007) where it inhabits herbaceous vegetation up to 650 m a.s.l. (mostly under 300 m) and has been found on Vicia. The localities in Bulgaria are mapped by Popov (2007). First record for Alba District. Range: Morocco, Central and Southern Europe and Northern Asia eastwards to Maritime Territory in Russian Far East.

Mantispa aphavexelte U. Aspöck & H. Aspöck, 1994

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25' 33.5", xerothermic meadow, at light, 3♂♂, 2♀♀, 29.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 2♂♂, 2♀♀, 5.8.1996, JN & MBu; Melnik, 1♂, 10-16.7.2010, RR; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, at light, 1♀, 1.8.2013, RD. Black Sea Coast: Obzor, 44 km S of Varna, 2♀♀, 4.7.1997, TR.

This species occurs in Bulgaria in isolated localities on herbaceous vegetation (*Achillea millefolium*, *Anchusa officinalis*) in meadows and in forest edges on *Quercus*, *Salix* and near *Malus* up to 250 m a.s.l. The localities in Bulgaria are mapped by Popov (2007). The northern border of the species range runs through Northern Bulgaria. Range: Morocco, Southern Europe, Southern Ukraine, southern part of European Russia and Northern Asia eastwards to Mongolia and Chita Region in Russia.

Sagittalata perla (Pallas, 1772)

Bulgaria. Struma Valley: Mt. Kozhuh (Rupite), NE of Petrich, 1♀, 1-5.6.1998, JN & MBu.

There is no information about the habitats of *Sagittalata perla* in Bulgaria but in other parts of the range it occurs in open areas with isolated trees and shrubs similar to the two species of *Mantispa* mentioned above. This very rare species in Bulgaria was known so far in this country only from Stara Zagora (Buresch 1936) and Kresna Gorge (Popov 2001). The localities in Bulgaria are mapped by Popov (2007). The northern border of the species range passes through Southern Bulgaria. Range: Southern Europe, Ukraine, southern part of European Russia and Northern Asia eastwards to Altai Region in Russia.

Hemerobiidae

Hemerobius humulinus Linnaeus, 1758

Romania. Oltenia: Tepşenari, 12 km SE of Râmnicu Vâlcea, Vâlcea District, 1000 m, N 45º02', E 24º29', 1♀, 5.5.2005, RD. Dobrogea: W of Albeşti, Constanţa District, 21 m, N 43º 48', E 28º25', 1♂, 2.5.2012, RK.

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 1♀, 3.6.2000, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 1♀, 23-24.5.2005, RD; Slanchevo, 18 km W of Varna, 120 m, N 43º 14', E 27º42', 1♂, 1♀, 23.5.2005, RD. Central Stara Planina Range: Shipka Pass, 15 km N of Kazanlak, 1306 m, N 42º45', E 25º20', 1♂, 26.6.2002, RD; S of Shipka Pass, 14 km N of Kazanlak, 1050 m, N 42º44', E 25º19', 1♂, 2♀♀, 6.5.2005, RD. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º51', 4♀♀, 6.5.2005, RD.

Common species in both countries, often abundant occurring in lowlands and mountains up to 1500 m a.s.l. in Romania and up to 1400 m (as an exception at 2250 m in the subalpine belt) in Bulgaria. *Hemerobius humulinus* is a species with wide ecological plasticity inhabiting in Bulgaria predominantly deciduous trees (*Acer campestre*, *Quercus*, *Fagus*

sylvatica, *Carpinus betulus*) and rarely, but regularly, coniferous trees (*Picea abies*, *Pinus sylvestris*, *Pinus nigra*), including in pure coniferous forests. It is found rarely on deciduous shrubs (*Corylus avellana*) and on herbaceous vegetation in cultivated fields (*Zea mays*, *Medicago*) as well as abundantly in fruit orchards on *Malus domestica*, *Pyrus* and *Prunus*. Range: Europe, Northern Asia, North and Central America.

Hemerobius pini Stephens, 1836

Romania. Oltenia: Obârşia Lotrului, W of Vidra Reservoir, Vâlcea District, N 45º25', E 23º40', 2♂♂, 7♀♀, 27.6.2002, RD.

This is a common species inhabiting the coniferous forests in all mountainous areas in Romania. It occurs in this country mostly on *Picea abies* but rarely also on other coniferous tree species as well on shrubs in the subalpine belt up to 2000 m a.s.l. Range: Northern and Central Europe, the mountains of the Balkan Peninsula and Northwestern Anatolia as well Northern Asia eastwards to Siberia and Mongolia.

Hemerobius contumax Tjeder, 1932

Romania. Transylvania: Tărtărău Pass between Şureanu Mts. and Lotrului Mts., Alba District, N 45º28', E 23º38', 2♀♀, 27.6.2002, RD.

Hemerobius contumax has been found in Romania mainly on *Picea abies* but is much rarer than the previous species. It occurs in Carpathians and in mountains in Transylvania between 800 and 1800 m a.s.l. Range: Southern Scandinavia, Denmark, England, the mountains of Central Europe and Balkan Peninsula, Southern Italy and Anatolia.

Hemerobius nitidulus Fabricius, 1777

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 3♂♂, 1♀, 3.6.2000, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 1♂, 12.7.2004, RD. Black Sea Coast: Obzor, 44 km S of Varna, 4♂♂, 2♀♀, 4.7.1997, TR. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", 1♀, 30.7.2013, netting on trees, RD. Rila Mts.: 2000 m, 1♂, 28.5.1959, RB, coll. MIZW. Rhodopes Mts.: Yundola, 13 km W of Velingrad, N 42º02', E 23º50', on *Pinus sylvestris*, 1♂, 2♀♀, 25.6.2000, RD; Asenovgrad, 1♀, 7.6.1980, EG.

This species is associated with conifers. It is common in Bulgaria and is distributed everywhere in coniferous forests and plantations up to 2170 m a.s.l. with high preference to species of *Pinus*. So far, 96 % of the material of *Hemerobius nitidulus* from Bulgaria preserved in NMNHS has been collected on *Pinus nigra* and *Pinus sylvestris*. Only a few specimens are found on *Picea excelsa* and *Abies alba*. The species has been recorded regularly also in the lower part of the subalpine belt. Range: Europe and Northern Asia eastwards to Kamchatka and Sakhalin.

Hemerobius handschini Tjeder, 1957

Romania. Transylvania: Rimetea, Alba District, 1♂, 11-17.7.2015, TK. Oltenia: Drobeta – Turnu Severin, Mehedinţi District, N 44º38', E 22º37', 1♀, 6.6.2001, RD.

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25' 33.5", 1♂, 30.7.2013, netting on trees, RD. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º51', 1♀, 6.5.2005, RD.

Like the previous species, *Hemerobius handschini* inhabits coniferous trees. In Romania, besides on *Pinus* it has been found also on *Picea abies* and *Larix decidua* in the mountains up to 1600 m a.s.l. In Bulgaria, it occurs at every altitude on all species of *Pinus* (90 % of the material preserved in NMNHS), mostly on *Pinus nigra*, regularly on *Pinus heldreichii*, *Pinus sylvestris* and *Pinus peuce* and a few specimens have been found on *Juniperus communis* and *Picea abies*. Rare species in Romania and common species in Bulgaria. First records for Alba and Mehedinţi districts. Range: Southern Europe northwards to Poland as well Anatolia.

Hemerobius micans Olivier, 1793

Romania. Transylvania: Rimetea, Alba District, 2♂♂, 1♀, 11-17.7.2015, TK.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♀, 28.6.2000, RD. Central Stara Planina Range: S of Shipka Pass, 14 km N of Kazanlak, 1050 m, N 42º44', E 25º19', 1♂, 4♀♀, 6.5.2005, RD. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 3♂♂, 4♀♀, 31.7.2013, RD. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º 51', 2♀♀, 6.5.2005, RD. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 4.7.1997, TR.

Hemerobius micans is the most common species of Hemerobiidae in both countries. It occurs everywhere in lowlands and more abundantly in mountains up to 1800 m a.s.l. in Romania and mainly below 1700 m in Bulgaria. This species has a preference for *Fagus sylvatica* (93 % of the material from Bulgaria preserved in NMNHS) but has been found rarely also on many other deciduous trees, some coniferous trees (*Abies alba*, *Picea abies*, *Juniperus excelsa*) and deciduous shrubs (*Corylus avellana*). It is recorded with a few specimens in Bulgaria also above the timberline up to 2600 m. First record for the Black Sea Coast. Range: Europe northwarts to Southern Scandinavia as well Anatolia, Transcaucasia and Northern Iran.

Hemerobius lutescens Fabricius, 1793

Bulgaria. Central Stara Planina Range: Shipka Pass, 15 km N of Kazanlak, 1306 m, N 42º45', E 25º20', 1♀, 26.6.2002, RD.

In Bulgaria, this species occurs from 500 to 1900 m a.s.l. (usually below 1450 m) on various deciduous trees (often on *Quercus*) and rarely on shrubs (*Corylus avellana*). Range: Europe without its northernmost and southernmost parts as well Central Anatolia, Caucasus and Mongolia.

Hemerobius gilvus Stein, 1863

Bulgaria. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 10♂♂, 11♀♀, 23-24.5.2005, RD.

Thermophilic species occurring in Bulgaria mainly in its southern half up to 1420 m a.s.l. (usually below 1000 m). It inhabits oak forests and besides on *Quercus* only a few specimens has been found on other deciduous trees and shrubs. First record for Northeastern Bulgaria. Range: Southern Europe, Anatolia, Cyprus and Armenia.

Hemerobius marginatus Stephens, 1836

Romania. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 27.5.2002, RD.

In Romania, *Hemerobius marginatus* is a common species occurring usually in beech

forests in the mountains and rarely in the hilly parts of Transylvanian Plateau, besides on *Fagus sylvatica* also on other tree species. Range: Northern and Central Europe, northern part of the Balkan Peninsula, Transcaucasia, Far East and Sakhalin.

Wesmaelius concinnus (Stephens, 1836)

Bulgaria. Rhodopes Mts.: Yundola, 13 km W of Velingrad, N 42º02', E 23º50', on *Pinus sylvestris*, 1♂, 25.6.2000, RD.

Wesmaelius concinnus is a rare species in Bulgaria known so far only from Predela Pass between Rila and Pirin mountains on *Pinus nigra* (Popov 1986b). First record for Rhodopes Mts. Yundola is located on the southern range border of the species. Range: Northern and Central Europe, mountains in the northern half of the Balkan Peninsula, Northern Asia eastwards to Siberia.

Wesmaelius nervosus (Fabricius, 1793)

Bulgaria. Central Stara Planina Range: S of Shipka Pass, 14 km N of Kazanlak, 1050 m, N 42º44', E 25º19', 1♀, 6.5.2005, RD.

This species occurs in Bulgaria from 500 to 1650 m a.s.l. more often in the beech than in the oak belt. One specimen has been collected on *Betula pendula*. There are no data on the associated vegetation for the rest of the specimens. Most of them have been attracted by light. Range: North America, Europe and Northern Asia.

Sympherobius pygmaeus (Rambur, 1842)

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25' 33.5", xerothermic meadow, at light, 2♂♂, 2♀♀, 29.7.2013, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 17♂♂, 24♀♀, 23-24.5.2005, RD. Black Sea Coast: Obzor, 44 km S of Varna, 1♂, 2♀♀, 6.7.1997, TR.

In Bulgaria, this species is distributed in lowlands and lower parts of the mountains up to 1200 m a.s.l. (usually below 1000 m). It occurs mostly on *Quercus*, regularly on *Juniperus excelsa* and rarely on many species of deciduous trees and shrubs, on coniferous trees of the genus *Pinus* and on herbaceous vegetation. In Struma Valley, *Sympherobius pygmaeus* finds favourable conditions for development on *Juniperus excelsa*. It cannot be considered however as a typical dweller of this tree species because the Greek juniper does not occur in almost all of its localities. Range: Europe northwards to Southern Scandinavia as well Northwestern Africa, Anatolia, Israel, Georgia, Azerbaijan, Iran, Turkmenistan and Kazakhstan.

Sympherobius elegans (Stephens, 1836)

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25' 33.5", xerothermic meadow, at light, 1♂, 29.7.2013, RD; Melnik, 400 m, N 41º31'22.2", E 23º23'30.9", netting on roadside vegetation, 1♀, 1.8.2013, RD. Northeastern Bulgaria: Slanchevo, 18 km W of Varna, 120 m, N 43º14', E 27º42', 1♀, 23.5.2005, RD. Black Sea Coast: Obzor, 44 km S of Varna, 3♂♂, 5♀♀, 4.7.1997, TR.

Sympherobius elegans is a relatively rare species in Bulgaria. It occurs in this country up to 1400 m a.s.l. (usually below 1000 m) on *Fagus sylvatica*, *Fagus orientalis* and *Quercus*. First record for Struma Valley. Range: Europe except its northernmost parts as well Anatolia, Azerbaijan and Kazakhstan.

Sympherobius fuscescens (Wallengren, 1863)

Bulgaria. Rhodopes Mts.: Yundola, 13 km W of Velingrad, N 42º02', E 23º50', on *Pinus sylvestris*, 1♂, 1♀, 25.6.2000, RD.

Mountain species distributed in Bulgaria between 700 and 1600 m a.s.l. (usually above 950 m) on most coniferous species and on *Juniperus sabina*. It occurs mainly on *Pinus sylvestris*, regularly on *Picea abies* and *Abies alba* and rarely on *Pinus nigra* and introduced species of *Pinus*. The southern border of the species range corresponds to the country border between Bulgaria and Greece (Popov 2002b: Fig. 3). Range: Europe and Northern Asia.

Sympherobius klapaleki Zelený, 1963

Bulgaria. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 1♀, 23-24.5.2005, RD.

This rare species in Bulgaria was reported in this country only from Kotel in Eastern Stara Planina Range (Popov 1986b), Plana Mts. (Popov 1991) and Smolyan Lakes in Western Rhodopes Mts. (Popov 1998). It inhabits only *Quercus* and the altitudes of the known localities are between 310 m (present material) and 1300 m a.s.l. First record for Northeastern Bulgaria. Kamenar (present material) and the localities in Bursa Province in Northwestern Anatolia (Kovanci *et al.* 2014) outline the eastern range border of the species. Range: England, Spain, Germany, Switzerland, Italy, Austria, Czech Republic, Poland, Romania and Bulgaria (Aspöck *et al.* 2001). Besides from these countries, *Sympherobius klapaleki* is known also from France, Netherlands, Denmark, Slovakia, Hungary, Ukraine and Northwestern Anatolia.

Megalomus tortricoides Rambur, 1842

Romania. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 27.5.2002, RD.

Bulgaria. Rhodopes Mts.: Yagodina, S of Devin, 1100 m, 4♂♂, 1♀, 17.7.2002, JN & MBu.

Megalomus tortricoides inhabits in both countries mostly deciduous shrubs. In Romania, it is distributed in the hilly and mountainous areas up to 1000 m a.s.l. in xerophilous habitats and prefers forests of *Pinus* with deciduous shrubs on rocky places. In Bulgaria, it is a common species in lowlands and mountains up to 1200 m (rarely up to 1600 m) on *Corylus avellana*, *Prunus* and *Sambucus racemosa*. Range: Southern and Central Europe northwards to Belgium (old data), Germany and Poland except their northernmost parts as well Anatolia and Transcaucasia.

Megalomus hirtus (Linnaeus, 1761)

Romania. Transylvania: Rimetea, Alba District, 1♂, 11-17.7.2015, TK.

This species occurs in Romania in habitats similar to these of *Megalomus tortricoides*. The two species occur sometimes together. Range: Southern Scandinavia, Central Europe, Northern Spain, Italy, northwestern part of the Balkan Peninsula (Slovenia, Croatia, Serbia) and Armenia.

Megalomus tineoides Rambur, 1842

Bulgaria (Fig. 2, 3). Struma Valley: Skakavitsa Railway Station, N of Kyustendil, 580 m, N 42º25', E 22º42', 1♀, 23.9.1982, JG, coll. NMNHS; Sandanski, 350 m, N 41º36',

Fig. 2. *Megalomus tineoides*, ♀ from Karlanovo, NE of Melnik (photo A. Larysz).

E 23º18', 1 specimen without abdomen, 18.9.1966, 1♀, 19.9.1966, HL, coll. NMNHS; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♀, 31.7.2013, RD; Melnik, 2♀♀, 10-16.7.2010, RR & RR. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 2.7.1997, 1♂, 4.7.1997, TR.

New species for the fauna of Bulgaria. The identification of the two females from Skakavitsa and Sandanski is confirmed by Horst Aspöck and Ulrike Aspöck in 1983. The male from Obzor in the present material is a reliable evidence for the occurrence of this species in Bulgaria.

In other parts of its range, this species occurs on various shrubs and rarely on trees, especially on *Quercus* (Aspöck *et al.* 1980). Skakavitsa and Obzor lie on the northern border of the species range and shift this border by ca. 290 km northwards. Range: Morocco, Southern Europe, Anatolia and Armenia.

Micromus variegatus (Fabricius, 1793)

Romania. Transylvania: Rimetea, Alba District, 1♂, 11-17.7.2015, TK. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 2♂♂, 1♀, 27.5.2002, RD.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♀, 28.6.2000, RD. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º 25'33.5", xerothermic meadow, at light, 1♀, 29.7.2013, netting, 1♂, 1♀, 31.7.2013, RD.

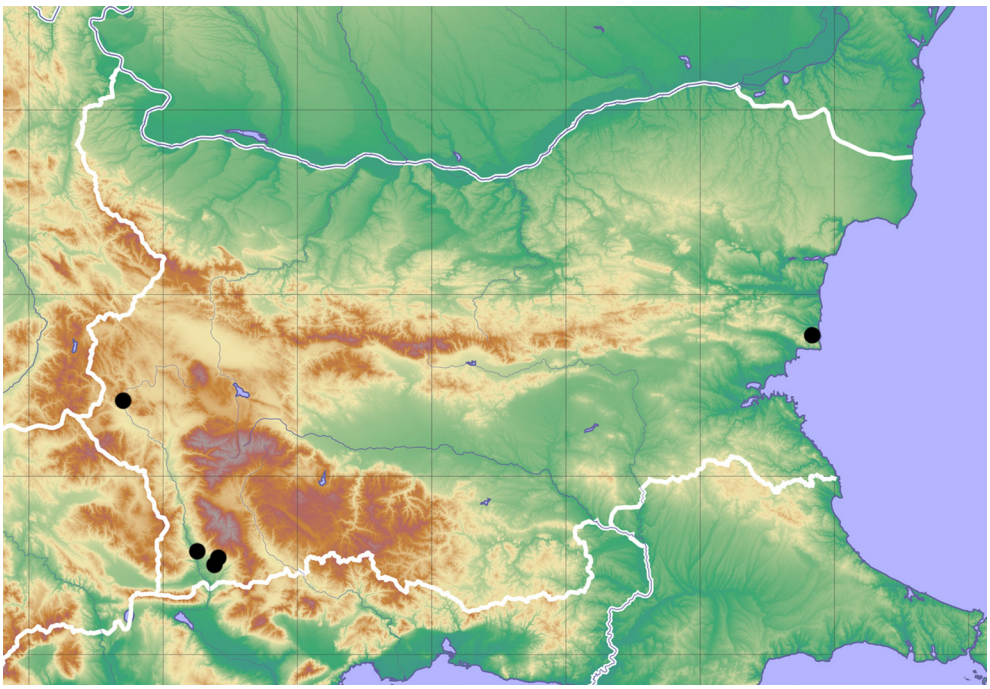

Fig. 3. Distribution of *Megalomus tineoides* in Bulgaria (Map outline credit: Equestenebrarum, CC-BY-SA-3.0, via Wikimedia Commons).

Micromus variegatus inhabits herbaceous vegetation in lowlands and lower parts of the mountains in both countries. In Romania, it is a common species in deciduous forests and cultivated areas with a preference for humid habitats along brooks and rivulets. In Bulgaria, it occurs up to 1450 m a.s.l. (usually below 900 m) mostly on *Medicago* in meadows and forests. Range: Europe northwards to Southern Sweden as well Northern Asia. This Palearctic species is introduced accidentally into British Columbia and Quebec in Canada (Klimaszewski *et al.* 2009).

Micromus angulatus (Stephens, 1836)

Romania. Transylvania: Cheia (near Turda), Cluj District, 1♀, 16.6.2007, netting, RSz; Rimetea, Alba District, 1♂, 1♀, 11-17.7.2015, TK.

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45’36.5”, E 23º 09’20.6”, xerothermic meadow on the Struma River bank, at light, 1♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32’25.7”, E 23º25’33.5”, xerothermic meadow, at light, 1♀, 31.7.2013, RD; Hotovo, SW of Melnik, 200 m, N 41º30’01.88”, E 23º20’35.73”, grassland hill, at light, 1♀, 1.8.2013, RD. Black Sea Coast: Obzor, 44 km S of Varna, 5♂♂, 4♀♀, 6.7.1997, TR.

This species occurs in lowlands and mountains up to 1500 m a.s.l. on herbaceous vegetation in both countries. In Romania, it inhabits deciduous and coniferous forests. So far, *Micromus angulatus* was known in Bulgaria only from Kresna Gorge (Popov 2001), Borovets in Rila Mts., Cherni Osam in Central Stara Planina Range and Koprivets in the eastern part of Danubian Plain (Popov 2002a). In Bulgaria, it inhabits forest-steppe habitats

and occurs mostly on various herbaceous types of vegetation in fruit orchards as well in alfalfa fields (*Medicago sativa*). First record for the Black Sea Coast. Range: North America, Morocco, Europe and Northern Asia.

Micromus lanosus (Zelený, 1962)

Romania. Transylvania: Rimetea, Alba District, 1♀, 11-17.7.2015, TK. Muntenia: Sinaia (labelled Sinaica), Prahova District, 1♂, 2.7.1959, RB, coll. MIZW.

Bulgaria. Central Stara Planina Range: Shipka Pass, 15 km N of Kazanlak, 1306 m, N 42º45', E 25º20', 1♂, 26.6.2002, RD.

In Romania, this species inhabits deciduous and coniferous forests between 350 and 1300 m a.s.l. In Bulgaria, it prefers deciduous shrubs and occurs up to 1400 m on *Corylus avellana* and only one specimen has been collected on *Picea abies*. First record for Prahova District. The southern border of the range on the Balkan Peninsula runs through Bjeshkët e Namuna Mts. (or Alpet Shqiptare or Prokletije) in Albania (Klokočovnik *et al.* 2014), Biograd Lake in Montenegro (Saure 1989), Karadžica Mts. in Macedonia (Devetak *et al.* 2015b) and in Bulgaria through Borovets in Rila Mts. (Popov 1991), Troyan Mts. in Central Stara Planina Range (Popov 2000), Shipka (present material) and Burgas (Popov 1977). Range: southern part of Central Europe (northwards to Central Germany, Czech Republic, Southern Poland and Western Ukraine), Northern Spain, Northern Italy, northern half of the Balkan Peninsula, Northeastern Anatolia, Georgia, Dagestan, Azerbaijan.

Chrysopidae

Nothochrysa fulviceps (Stephens, 1836)

Romania. Transylvania: Rimetea, Alba District, 3♂♂, 4♀♀, 11-17.7.2015, TK.

This species inhabits deciduous trees mostly in the oak belt. It is a rare species in Romania distributed mainly northwards and westwards of the Carpathians. Rimetea and other localities in Romania outline the eastern range border of the species. Range: Central Europe and adjacent parts of Northern and Southern Europe.

Nothochrysa capitata (Fabricius, 1793)

Romania. Muntenia: Sinaia (labelled Sinaica), Prahova District, 1♂, 2.7.1959, RB, coll. MIZW.

Nothochrysa capitata is a mountain species occurring on coniferous trees. It is rare in Romania known only by four specimens from Semenic Mts. in Banat and Sinaia in Muntenia on *Picea abies* (Kis 1965b) and Furnica and Cumpătul near Sinaia in a mixed beech-conifer forest (Paulian *et al.* 2001) between 800 and 930 m a.s.l. The three localities in the environs of Sinaia, situated at a distance of only 12 km one from another, are the easternmost ones in the species range. The range covers Central Europe and the nearest parts of Northern Europe and the species is rarely found in Southern Europe and Northwestern Africa.

Italochrysa italica (Rossi, 1790)

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, at light, 1♂, 30.7.2013, JN, 2♀♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5",

xerothermic meadow, at light, 7♂♂, 9♀♀, black light, 1♂, 1♀, 29.7.2013, netting on trees, 1♂, 1♀, 30.7.2013, xerothermic meadow, netting and at light, 14♂♂, 11♀♀, 31.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 3♂♂, 4♀♀, 5.8.1996, JN & MBu; Melnik, 2♂♂, 1♀, 10-16.7.2010, RR & RR; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20' 35.73", grassland hill, at light, 2♀♀, 1.8.2013, RD; Kalimantsi, SE of Melnik, at light, 2♂♂, 8.7.2003, JN & MBu. Thracian Lowland: near Krichim, N 42º04'45", E 24º26'54", 1♀, 25.7.2009, ŁP. Rhodopes Mts.: Arda River Valley, 2♂♂, 8.8.1996, JN & MBu. Black Sea Coast: Byala, 38 km S of Varna, 1♀, 5-14.8.2002, ŁP; Obzor, 44 km S of Varna, 1♀, 4.7.1997, TR.

This xerothermic species occurs mainly in Southern Bulgaria in the lowlands up to 500 m a.s.l. mostly on *Quercus* as well on *Acer campestre* and other deciduous tree species. Range: Southern Europe and Eastern Mediterranean countries eastwards to Iraq.

Nineta vittata (Wesmael, 1841)

Romania. Muntenia: Sinaia (labelled Sinaica), Prahova District, 1♀, 2.7.1959, RB, coll. MIZW.

Nineta vittata inhabits the beech belt in the mountains of Romania. It is not rare in Transylvania and Carpathians and has been found also in Moldavia. Sinaia is located on the southern range border. Range: Northern, Central and adjacent parts of Southern Europe as well Northern Asia eastwards to Kamchatka and Japan.

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

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", netting on trees, 1♀, 30.7.2013, xerothermic meadow, netting and at light, 1♂, 1♀, 31.7.2013, RD.

In Bulgaria, this species is relatively rare. It occurs in the lower parts of the mountains predominantly on *Fagus sylvatica*. *Chrysopidia ciliata* is not typical for the beech belt but has high humidity requirements and inhabits shady habitats along running waters. It was found also on *Quercus*, fruit trees and on shrubs. First record for Struma Valley. Range: Northern and Central Europe and isolated occurrence in Southern Europe as well Northern Asia eastwards to Japan.

Chrysopa perla (Linnaeus, 1758)

Romania. Transylvania: Rimetea, Alba District, 1♂, 11-17.7.2015, TK. Banat: Armeniş, 27 km S of Caranasebeş, Caraş Severin District, N 45º12', E 22º19', 1♀, 2.6.2000, RD. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 27.5.2002, RD; Obârşia Lotrului, W of Vidra Reservoir, Vâlcea District, N 45º25', E 23º40', 1♂, 27.6.2002, RD.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♂, 4♀♀, 28.6.2000, RD. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♂, 1♀, 29.7.2013, RD.

Very common species reaching often high abundance in both countries in lowlands and mountains up to the timberline (1800 m a.s.l.). It inhabits various shrub species, herbaceous vegetation, coniferous and deciduous trees. First record for Struma Valley. Range: Europe and Northern Asia eastwards to the Far East.

Chrysopa walkeri McLachlan, 1893

Romania. Transylvania: Rimetea, Alba District, 1♀, 11-17.7.2015, TK.

This species is distributed in Romania in lowlands on herbaceous vegetation and shrubs in dry habitats. The southern border of the range runs through Romania. Range: from Central Europe to Kyrgyzstan.

Chrysopa dorsalis Burmeister, 1839

Bulgaria. Black Sea Coast: Obzor, 44 km S of Varna, 4♂♂, 4.7.1997, TR.

Thermophilic species occurring relatively rarely in Bulgaria on *Pinus sylvestris* and *Pinus nigra* in the coniferous belt of the mountains and in pine plantations in the lowlands. It was not found so far in Bulgaria at an altitude near to the sea level. First record for the Black Sea Coast. Range: Northern, Central and Southeastern Europe and Southwestern Asia eastwards to Kazakhstan.

Chrysopa abbreviata Curtis, 1834

Romania. Oltenia: Bumbeşti-Jiu, 17 km S of Petroşani (26 km by the road), Gorj District, N 45º16', E 23º24', 14♂♂, 24.5.2005, RD.

In Romania, this species occurs in lowlands and lower parts of the mountains on herbaceous vegetation and rarely was found on deciduous shrubs and trees. Range: Northern, Central and Southeastern Europe and Northern Asia eastwards to the Far East.

Chrysopa formosa Brauer, 1851

Bulgaria. Struma Valley: Mt. Kozhuh (Rupite), NE of Petrich, 7♂♂, 1♀, 1-5.6.1998, JN & MBu; Kalimantsi, SE of Melnik, at light, 1♀, 8.7.2003, JN & MBu. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 1♀, 12.7.2004, RD; Slanchevo, 18 km W of Varna, 120 m, N 43º14', E 27º42', 1♂, 23.5.2005, RD.

Chrysopa formosa is widely distributed in Bulgaria usually in lowlands up to 1350 m a.s.l. (mostly below 900 m) on herbaceous vegetation and more rarely on deciduous and coniferous trees and shrubs. Range: Central and Southern Europe, Northwestern Africa and Northern Asia eastwards to Kamchatka and Japan.

Chrysopa phyllochroma Wesmael, 1841

Bulgaria. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 1♀, 12.7.2004, RD.

This species was known so far in Bulgaria only from Arkutino on the Black Sea Coast (Popov 1977), Katundere in Strandzha Mts. (Popov 1990a) and Han Krum near Preslav (Popov 1998). Kamenar is the highest situated locality in this country. *Chrysopa phyllochroma* occurs in Bulgaria on herbaceous vegetation and one specimen was found on *Quercus*. Range: Northern and Central Europe and isolated occurrence in Southern Europe as well Northern Asia eastwards to the Far East.

Chrysopa viridana Schneider, 1845

Bulgaria. Struma Valley: Rozhen Monastery, NE of Melnik, 650 m, 4♀♀, 5.8.1996, JN & MBu; Kalimantsi, SE of Melnik, at light, 1♂, 8.7.2003, JN & MBu. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 1♀, 23-24.5.2005, RD.

In Bulgaria, this species occurs mainly in the southern half of the country in lowlands up to 1000 m a.s.l. on *Quercus*. First record for Northeastern Bulgaria. Range: Southern Europe and southern parts of Central Europe, Northern Africa and Asia eastwards to Afghanistan.

Chrysopa nigricostata Brauer, 1851

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.8", E 23º09'26.6", xerothermic meadow on the Struma River bank, at light, 1♀, 2.8.2013, RD; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20' 35.73", grassland hill, at light, 1♀, 1.8.2013, RD.

Chrysopa nigricostata inhabits herbaceous vegetation in lowlands of Bulgaria but was found also on some deciduous tree species. Range: Central and Southern Europe, Northwestern Africa and Asia eastwards to Kyrgyzstan.

Chrysopa pallens (Rambur, 1838)

Romania. Bucharest: Carnica near Bucharest, 1♀, 13.8.1965, RB, coll. MIZW. Dobrogea: Valu lui Traian, Constanţa District, 1♀, 19.7.1959, RB, coll. MIZW.

Bulgaria. Black Sea Coast: Zlatni Pyasatsi Resort, 12 km NE of Varna, 1♂, July 1984, KD; Byala, 38 km S of Varna, 2♀♀, 5-14.8.2002, ŁP; Arkutino Lake between Sozopol and Primorsko, 2♂♂, 7-8.6.1998, JN & MBu.

Common species in both countries, often in high abundance. It occurs up to 1500 m a.s.l. mostly on *Quercus* as well on fruit and other deciduous trees and shrubs and on crops. Range: Europe, Northwestern Africa and Asia eastwards to Japan and Taiwan.

Recently, Tillier *et al*. (2014) restored the species status as bona species of the closely related *Chrysopa gibeauxi* (Leraut, 1989) described as subspecies of *Metachrysopa pallens* by Leraut (1989), raised in rank of a distinct species by Leraut (1992) and synonymized with *Chrysopa pallens* by Aspöck *et al.* (2001). All specimens from Bulgaria and Romania in Polish collections belong to *Chrysopa pallens* and do not correspond to the distinguishing characters of *Chrysopa gibeauxi* given by Tillier *et al.* (2014) and Devetak *et al.* (2015a). *Chrysopa gibeauxi* is not found so far in Romania and Bulgaria but its occurrence in these countries can be expected.

Pseudomallada flavifrons (Brauer, 1851)

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.8", E 23º09'26.6", xerothermic meadow on the Struma River bank, at light, 1♂, 30.7.2013, JN, 3♂♂, 4♀♀, 2.8.2013, RD; Kresna Gorge, Sheytandere River, N of Kresna, 200 m, 1♀, 24-25.6.2001, JN & MBu; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♀, black light, 1♂, 29.7.2013, netting on trees, 1♂, 1♀, 30.7.2013, xerothermic meadow, at light, 2♂♂, 1♀, 31.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 1♀, 5.8.1996, JN & MBu; Melnik, 1♀, 10-16.7.2010, RR & RR, 400 m, N 41º31'31.82", E 23º23'31.48", netting on roadside vegetation, 1♂, 1.8.2013, RD; Damyanitsa, S of Sandanski, N 41º30', E 23º15', 2♀♀, 9-18.6.2009, ZCh. Rhodopes Mts.: Asenova Krepost site S of Asenovgrad, 400 m, 1♂, 16.6.2001, JN & MBu.

This is a common species distributed in whole Bulgaria up to 1350 m a.s.l. (mostly below 1000 m) usually on deciduous trees (predominantly on *Quercus*). All specimens belong to *Pseudomallada flavifrons flavifrons*. Range: Europe (another subspecies occurs in Iberian Peninsula and Northwestern Africa) and Southwestern Asia eastwards to Iran.

Pseudomallada prasinus (Burmeister, 1839)

Romania. Transylvania: Rimetea, Alba District, 11-17.7.2015, 2♀♀, TK.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♂, 3♀♀, 28.6.2000, RD. Central Stara Planina Range: Shipka Pass, 15 km N of Kazanlak, 1306 m, N 42º45', E 25º20', 1♂, 26.6.2002, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', 5♂♂, 23-24.5.2005, RD; Slanchevo, 18 km W of Varna, 120 m, N 43º14', E 27º42', 2♀♀, 23.5.2005, RD. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting, 2♂♂, 7♀♀, at light, 1♂, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 16♂♂, 44♀♀, 29.7.2013, netting on trees, 12♂♂, 27♀♀, 30.7.2013, xerothermic meadow, netting, 14♂♂, 42♀♀, at light, 1♀, 31.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 1♀, 5.8.1996, JN & MBu; Melnik, N 41º31', E 23º24', 1♀, 26-27.6.2000, RD, 1♀, 10-16.7.2010, RR & RR, 400 m, N 41º31'22.2", E 23º23'30.9", netting on roadside vegetation, 2♀♀, 1.8.2013, RD; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, netting, 3♂♂, 5♀♀, at light, 11♂♂, 10♀♀, 1.8.2013, RD; Mt. Kozhuh (Rupite), NE of Petrich, 1♀, 1-5.6.1998, JN & MBu. Belasitsa Mts.: 1600 m, 1♂, 14.7.2002, JN & MBu. Rhodopes Mts.: Yagodina, S of Devin, 1100 m, 4♀♀, 17.7.2002, JN & MBu; Asenova Krepost site S of Asenovgrad, 400 m, 1♀, 16.6.2001, JN & MBu; Dolno Cherkovishte, W of Madzharovo, Arda Valley, 16♀♀, 6-7.6.1998, JN & MBu; Arda River Valley, 1♂, 8.8.1996, JN & MBu. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º51', 6♂♂, 5♀♀, 6.5.2005, RD; Lyubimets, NW of Svilengrad, N 41º51', E 26º05', 12♂♂, 14♀♀, 6.5.2005, RD. Black Sea Coast: Balchik, 1♂, 2♀♀, 10.8.1996, JN & MBu; Arkutino Lake between Sozopol and Primorsko, 2♀♀, 7-8.6.1998, JN & MBu; Ropotamo Reserve, N of Primorsko, 1♂, 1♀, 10.7.1998, JN & MBu.

Very common species widely distributed in both countries. It occurs in lowlands and mountains up to 1650 m a.s.l. (usually below 1200 m) on a broad spectrum of deciduous trees and shrubs but mostly on *Quercus*. First record for Belasitsa Mts. Range: Europe, Northwestern Africa and Northern Asia eastwards to Japan.

Pseudomallada zelleri (Schneider, 1851)

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.8", E 23º09'26.6", xerothermic meadow on the Struma River bank, netting, 1♀, 2.8.2013, RD; Kresna Gorge, Sheytandere River, N of Kresna, 200 m, 1♀, 24-25.6.2001, JN & MBu; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 7♂♂, 4♀♀, black light, 1♂, 29.7.2013, netting on trees, 1♂, 4♀♀, 30.7.2013, xerothermic meadow, netting, 12♂♂, 31.7.2013, RD; Melnik, 400 m, N 41º31'31.82", E 23º23'31.48", netting on roadside vegetation, 1♂, 1.8.2013, RD. Rhodopes Mts.: Dolno Cherkovishte, W of Madzharovo, Arda Valley, 1♂, 6-7.6.1998, JN & MBu.

Pseudomallada zelleri was known so far in Bulgaria from the warmest lower southern parts of the country: Odrintsi in Eastern Rhodopes Mts. (Popov 1991) and Kresna Gorge (Popov 2001). It occurs on *Quercus* in arid pseudomaquis with various deciduous vegetation. Kresna Gorge and Dolno Cherkovishte are located on the northern range border. Range: Mediterranean Europe (except Iberian Peninsula) and Southwestern Asia eastwards to Iran.

Pseudomallada ventralis (Curtis, 1834)

Romania. Banat: Armeniş, 27 km S of Caranasebeş, Caraş Severin District, N 45º12', E 22º19', 1♀, 2.6.2000, RD. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 2♂♂, 27.5.2002, RD.

Bulgaria. Belasitsa Mts.: 1600 m, 1♂, 14.7.2002, JN & MBu.

This is a mountain cold-resistant species. It occurs in the two countries from 450 m a.s.l. to the timberline mainly on *Pinus sylvestris*. Only few specimens were collected on *Abies alba*, *Fagus sylvatica* and deciduous shrubs. First record for Belasitsa Mts. Belasitsa is located on the southeastern range border of the species. Range: Europe.

Pseudomallada clathratus (Schneider, 1845)

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 1♂, 3.6.2000, RD.

This species occurs in lowlands of Bulgaria mainly in the southern part of the country in isolated localities up to 1000 m a.s.l. (mostly below 650 m). It inhabits orchards, agrocoenoses, shrubs and *Quercus*. Rabisha is situated on the northern border of the species range. Range: Europe and Anatolia.

Cunctochrysa albolineata (Killington, 1935)

Romania. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 1♀, 27.5.2002, RD.

Bulgaria. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 1♀, 28.6.2000, RD. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.8", E 23º09'26.6", xerothermic meadow on the Struma River bank, at light, 2♂♂, 3♀♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 9♂♂, 34♀♀, black light, 1♂, 3♀♀, 29.7.2013, netting on trees, 1♂, 2♀♀, 30.7.2013, xerothermic meadow, netting, 2♀♀, at light, 1♂, 6♀♀, 31.7.2013, RD; Melnik, 400 m, N 41º 31'31.82", E 23º23'31.48", netting on roadside vegetation, 1♂, 1.8.2013, RD.

Cunctochrysa albolineata inhabits deciduous trees, e.g. *Quercus*, and shrubs in lowlands of both countries. Range: Europe and Northern Asia eastwards to the Russian Far East and Korea.

Cunctochrysa cosmia (Navás, 1918)

Bulgaria. Rhodopes Mts.: Dolno Cherkovishte, W of Madzharovo, Arda Valley, 1♂, 6-7.6.1998, JN & MBu. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 4.7.1997, TR.

New species for the fauna of Bulgaria. The identification is confirmed by Victor Monserrat. Both specimens from Bulgaria correspond better to *Cunctochrysa cosmia* than to *Cunctochrysa albolineata*.

This species is described from Spain (Province of Huesca) by Navás (1918) as *Chrysopa cosmia*. Hölzel (1973) synonymized it with *Chrysopa nigricostata* after an examination of the type specimen. Leraut (1988) described *Cunctochrysa bellifontensis*, a species closely related to *Cunctochrysa albolineata*, and later synonymized with it by Aspöck *et al.* (2001). As a result of a new investigation of the type of *Chrysopa cosmia*, Monserrat *et al.* (2014) restored its status of a distinct species, transferred it to *Cunctochrysa* and synonymized *Cunctochrysa bellifontensis* with it. A question arises, why such a prominent authority on Chrysopidae as Herbert Hölzel has synonymized incorrectly *Chrysopa cosmia* and left it

in the genus *Chrysopa*. The answer is that the examined type specimen is a female and there are no distinguishing characters of females between *Chrysopa* and some related genera, including *Cunctochrysa*. Furthermore, the species is very similar morphologically to *Chrysopa nigricostata* without being closely related to it.

According to Monserrat *et al.* (2014), *Cunctochrysa cosmia* occurs in Spain on *Pinus* between 670 and 2100 m a.s.l. The localities in Bulgaria, Dolno Cherkovishte and Obzor, are situated at lower altitudes, at 170 m a.s.l. and near to the sea level respectively, but at less than 0.5 km from each of them there is a small pine plantation. Range: Great Britain (Plant 1993), Spain (Monserrat *et al.* 2014), France (Leraut 1988), Netherlands (Lock, San Martin 2013; without exact locality), Italy (Letardi *et al*. 2010), Romania (Monserrat *et al.* 2014), Bulgaria (present material) and Georgia (Duelli *et al.* 2015). In Italy, this species occurs in Trentino – Alto Adige (Letardi *et al*. 2010), and the information about its finding in Emilia Romagna and Tuscany are doubtful or can not be verified (Letardi 2017).

Chrysoperla carnea (Stephens, 1836) s.l.

Romania. Crişana: 6 km W of Pecica, Arad District, N 46º10', E 21º00', 1♀, 27.4.2012, RK. Banat: Armeniş, 27 km S of Caranasebeş, Caraş Severin District, N 45º12', E 22º19', 1♂, 2.6.2000, RD. Oltenia: Motru Sec, 36 km NE of Băile Herculane, Gorj District, N 45º04', E 22º47', 1♂, 2♀♀, 27.5.2002, RD; Obârşia Lotrului, W of Vidra Reservoir, Vâlcea District, N 45º25', E 23º40', 1♂, 27.6.2002, RD. Dobrogea: Letea, Danube Delta, Tulcea District, 1♂, 3♀♀, 10.7.1959, RB, coll. MIZW; Sulina, Danube Delta, Tulcea District, 1♀, 10.7.1959, RB, coll. MIZW; Valu lui Traian, Constanţa District, 2♂♂, 1♀, 19.7.1959, RB, coll. MIZW; W of Albeşti, Constanţa District, 21 m, N 43º48', E 28º25', 1♀, 2.5.2012, RK.

Bulgaria. Northwestern Bulgaria: Rabisha, NW of Belogradchik, N 43º43', E 22º36', 3♂♂, 3.6.2000, RD. Western Stara Planina Range: Gintsi, NE of Godech, N 43º05', E 23º06', 2♀♀, 28.6.2000, RD. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 8♀♀, 12.7.2004, netting, 3♂♂, 23-24.5.2005, RD; Slanchevo, 18 km W of Varna, 120 m, N 43º14', E 27º42', 1♂, 5♀♀, 23.5.2005, RD. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, 3♀♀, 30.7.2013, JN, netting and at light, 1♂, 7♀♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 9♂♂, 36♀♀, 29.7.2013, netting on trees, 5♀♀, 30.7.2013, xerothermic meadow, netting, 2♀♀, at light, 5♂♂, 19♀♀, 31.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 1♂, 3♀♀, 5.8.1996, JN & MBu; Melnik, 400 m, N 41º31'22.2", E 23º23'30.9", netting on roadside vegetation, 1♀, 1.8.2013, RD; Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, at light, 11♀♀, 1.8.2013, RD; Kalimantsi, SE of Melnik, at light, 1♀, 8.7.2003, JN & MBu; Mt. Kozhuh (Rupite), NE of Petrich, 1♀, 1-5.6.1998, JN & MBu. Belasitsa Mts.: 1600 m, 2♂♂, 8♀♀, 14.7.2002, JN & MBu. Pirin Mts.: South slopes below Pirin Village, 600 m, 1♀, 8.6.2010, A & AN. Rhodopes Mts.: Asenova Krepost site S of Asenovgrad, 400 m, 1♀, 16.6.2001, JN & MBu; Dolno Cherkovishte, W of Madzharovo, Arda Valley, 1♂, 2♀♀, 6-7.6.1998, JN & MBu. Thracian Lowland: Panicherevo, 18 km NW of Nova Zagora, 300 m, N 42º36', E 25º51', 2♂♂, 3♀♀, 6.5.2005, RD; Lyubimets, NW of Svilengrad, N 41º51', E 26º05', 1♂, 1♀, 6.5.2005, RD. Black Sea Coast: Balchik, 1♀, 10.8.1996, JN & MBu; Byala, 38 km S of Varna, 1♀, 5-14.8.2002, ŁP; Obzor, 44 km S of Varna, 1♂, 1♀, 6.7.1997, TR.

The material of *Chrysoperla carnea* complex of cryptic species from Polish museums is not identified to the species level excepting several specimens in the sample from Karlanovo.

Chrysoperla carnea s.l. is the most common complex among all Neuropterida in both countries. The complex as a whole inhabits all types of vegetation at any altitude (usually up to the timberline) and often occurs in mass. First records for Belasitsa Mts. and Pirin Mts. Range: Europe, Northern Africa and Asia.

Chrysoperla lucasina (Lacroix, 1912)

Bulgaria. Struma Valley: Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♂, 2♀♀, 29.7.2013, netting on trees, 1♀, 30.7.2013, RD.

So far, this species is known in Bulgaria from Sofia and Belasitsa Mts. (Thierry *et al.* 1998). Most likely, it is widely distributed in this country but the rich material of *carnea*-complex preserved in Bulgaria is not identified to species level. *Chrysoperla lucasina* inhabits herbaceous vegetation. First record for Struma Valley. Range: Central and Southern Europe, Northwestern Africa and Western Asia.

Nemopteridae

Nemoptera sinuata Olivier, 1811

Bulgaria. Struma Valley: Kresna Gorge, Sheytandere River, N of Kresna, 200 m, 2♂♂, 2♀♀, 24-25.6.2001, JN & MBu; Kresna Gorge, 6 km N of Kresna, 2♂♂, 3♀♀, 14.6.1987, JK; Sandanski, 1♂, 21.5.1999, JKu; Mt. Kozhuh (Rupite), NE of Petrich, 4♂♂, 1-5.6.1998, JN & MBu; Petrich, 3♂♂, 3♀♀, 26.5.1959, RBi, coll. MIZW. Rhodopes Mts.: Varvara, S of Septemvri, 1♂, 10.6.1977, MB; Asenovgrad, 1♂, 1♀, 26.5.1959, RBi, coll. MIZW, 1♀, July 1980, MB; Asenova Krepost site S of Asenovgrad, 400 m, 3♂♂, 4♀♀, 16.6.2001, JN & MBu; Bachkovo, S of Asenovgrad, 2♂♂, 8.6.1977, MB.

Nemoptera sinuata occurs only in Southern Bulgaria in isolated localities in valleys and gorges up to 1100 m a.s.l. (almost always below 700 m). It inhabits herbaceous vegetation in meadows and pseudomaquis feeding on pollen and nectar of only three plant species: *Achillea coarctata*, *Alyssum murale* and *Anthemis austriaca* (Krenn *et al.* 2008). The localities in Bulgaria are mapped by Popov (2007). The northern range border of the family Nemopteridae runs through Southern Bulgaria. Range: Macedonia, Northern Greece, Southern Bulgaria, European Turkey, Anatolia, Northern Syria, Transcaucasia and Northwestern Iran.

Myrmeleontidae

Palpares libelluloides (Linnaeus, 1764)

Bulgaria. Struma Valley: Petrich, 1♀, 6.8.1959, RBi, coll. MIZW; Mt. Kozhuh (Rupite), NE of Petrich, 200 m, 2♂♂, 1♀, 21.6.2001, JN & MBu. Black Sea Coast: Sozopol, 1♂, 18.7.1976, MS.

This species occurs in lowlands of Southern Bulgaria up to 1000 m a.s.l. (usually below 500 m) in treeless areas and pseudomaquis where it is often abundant, on rocky slopes, in vineyards and in habitats with isolated oak or beech trees. Range: Northwestern Africa, Southern Europe and Western Asia from Anatolia and Israel to Iran.

Acanthaclisis occitanica (Villers, 1789)

Bulgaria. Belasitsa Mts.: 1600 m, 1♂, 14.7.2002, JN & MBu. Rhodopes Mts.: Arda River Valley, 1♀, 8.8.1996, JN & MBu. Black Sea Coast: Obzor, 44 km S of Varna, 1♂, 24.6.-8.7.2003, LK.

Rare species in Bulgaria distributed mainly on the Black Sea Coast in sandy habitats but also in Rhodopes Mts. It is found so far up to 400 m a.s.l. (mainly below 100 m). The altitude of the locality in Belasitsa Mts. (present material) is unusually high and significantly exceeds the maximum altitude at which the species has been found in Europe. First record for Belasitsa Mts. Range: whole Central and Southern Europe as well Northern Africa and Western Asia from Anatolia and Israel to Eastern Kazakhstan and China.

Synclisis baetica (Rambur, 1842)

Bulgaria. Rhodopes Mts.: Arda River Valley, 1♀, 8.8.1996, JN & MBu.

Typical habitats of *Synclisis baetica* in Bulgaria are the Black Sea beaches and dunes. Besides, this species occurs rarely in the interior in the valleys of large rivers, namely Arda (present material), Struma, Iskar, with fine sand banks up to 500 m a.s.l. All 9 localities in Bulgaria are mapped by Popov (2002b: Fig. 7). First record for Rhodopes Mts. Range: Western France, Hungary, Eastern Romania, Crimea, Southern Europe, Algeria, Anatolia, Israel and Northern Iran.

Myrmecaelurus trigrammus (Pallas, 1771)

Romania. Dobrogea: Murighiol, Danube Delta, Tulcea District, at light, 3♂♂, 3♀♀, 26.7.2004, KG.

Bulgaria. Struma Valley: Blagoevgrad, 2♂♂, 10.7.1980, MB; Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting, at light, 5♂♂, 6♀♀, 2-3.8.2013, RD; Damyanitsa, S of Sandanski, N 41º30', E 23º15', 1♂, 9-18.6.2009, ZCh; Spatovo, W of Melnik, 167 m, N 41º30'10.6", E 23º18'32.3", xerothermic habitat, netting, 2♀♀, 29.7.2013, RD; Melnik, N 41º31', E 23º24', 5♂♂, 1♀, 26-27.6.2000, RD, 1♀, 10-16.7.2010, RR & RR. Rhodopes Mts.: Kardzhali, 1♀, 20.6.1979, DT.

Myrmecaelurus trigrammus is distributed on the Black Sea dunes in both countries where it is often abundant. In Romania, it occurs further only in the Danube delta in Dobrogea and along the Siret River and its tributary Bârlad River in Moldavia. In Bulgaria, it inhabits Black Sea beaches, open areas and steppe habitats in the lowlands up to 1000 m a.s.l. It occurs also in areas with isolated oak trees and its larvae have been found in the soil under trees of *Juniperus excelsa*. Range: Southern Europe northwards to Southern Slovakia and Ukraine as well Northern Temperate Asia eastwards to Central Siberian Plateau.

Myrmeleon formicarius Linnaeus, 1767

Bulgaria. Struma Valley: Kresna Gorge, Sheytandere River, N of Kresna, 200 m, 1♀, 24-25.6.2001, JN & MBu; Sandanski, 1♂, 22.5.1998, JKu, 2♀♀, 24.5.1999, SS; Melnik, N 41º32', E 23º25', 1♀, 9-22.7.2009, ZM; Mt. Kozhuh (Rupite), NE of Petrich, 1♂, 1-5.6.1998, JN & MBu. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 2.7.1997, TR.

This antlion is distributed in Bulgaria in lowlands and mountains up to 1600 m a.s.l. and is a typical species of forest meadows. It occurs mainly in the interior of the country, and on

the Black Sea Coast it inhabits only woodlands. *Myrmeleon formicarius* is a species with a wider ecological plasticity in comparison with the two other species of *Myrmeleon* reported here. This allows it to find suitable conditions at much higher altitudes. Range: Europe except its northernmost parts and Great Britain as well Northern Asia.

Myrmeleon noacki Ohm, 1965

Bulgaria. Struma Valley: Mt. Kozhuh (Rupite), NE of Petrich, 4♀♀, 1-5.6.1998, JN & MBu.

Myrmeleon noacki is a rare species in Bulgaria where the northern border of the range runs and its northernmost locality is situated. It is known so far from the southernmost parts of the country: Kresna Gorge (Popov 1993), Strandzha Mts. (Popov 1996) and Sandanski (Kačírek 2013). Mt. Kozhuh is one of the hottest places in Bulgaria. This species occurs at the lowest altitudes among all myrmeleontids in Bulgaria (up to 200 m a.s.l.). Larvae of *Myrmeleon noacki* have been found together with larvae of *Myrmeleon formicarius* only in the warmest parts of the country (Kresna Gorge) under trees of *Juniperus excelsa*. The habitats there are typical for *Myrmeleon noacki* and extreme for *Myrmeleon formicarius*. The range of *Myrmeleon noacki* is restricted to Greece, Southern Macedonia, Southern Bulgaria, European Turkey and Western Anatolia. The occurrence in Albania is possible but not certain (Devetak *et al.* 2013; published by Zelený 1964b as *Myrmeleon formicarius*).

Myrmeleon inconspicuus Rambur, 1842

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, ex larva, 2.8.2013, pupa 24.8.2013, 1♀ imago 9.9.2013, leg. et cult. RD, netting and at light, 1♂, 2♀♀, 2-3.8.2013, RD. Black Sea Coast: Nesebar, 1♂, 29.6.1997, TR; Dyuni Resort, S of Sozopol, sea coast, 1♀, 21.7.2007, WŻ.

In Bulgaria, this species inhabits lowlands up to 800 m a.s.l. It occurs in large numbers on the Black Sea Coast and rarely in the interior only in very dry habitats with fine sand. The larvae of *Myrmeleon inconspicuus* never occur together with the two other species of *Myrmeleon* reported here. Range: Southern Europe northwards to Western France, Austria, Slovakia, Ukraine and Southern Russia as well Morocco and Western Asia from Anatolia to Eastern Kazakhstan. Small isolated populations inhabit the Baltic Coast of Poland more than 500 km northwards from the continuous range of the species (Blaik & Dobosz 2010).

Macronemurus bilineatus Brauer, 1868

Bulgaria. Struma Valley: Spatovo, W of Melnik, 167 m, N 41º30'10.6", E 23º18'32.3", xerothermic habitat, netting, 1♂, 1♀, 29.7.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 2♀♀, 29.7.2013, RD.

This species is distributed in Bulgaria up to 1100 m a.s.l. (mostly below 700 m) preferring steppe terrains and Black Sea beaches. Range: Hungary, eastern part of the Balkan Peninsula, Ukraine, Southern Russia, Transcaucasia and Anatolia.

Delfimeus irroratus (Olivier, 1811)

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, at light, 1♀, 2.8.2013,

RD; Melnik, 3♂♂, 10-16.7.2010, RR. Southeastern Bulgaria: Sliven, 150 m, at light, 1♀, 11.7.1998, JN & MBu.

Rare species in Bulgaria reported only from Belogradchik (Popov 1996), Sandanski (Popov 1998) and Stara Kresna Railway Station (Popov 2001). These localities are mapped by Popov (2002b: Fig. 7). *Delfimeus irroratus* inhabits in this country open places and pseudomaquis and was found between 150 m (present material) and 500 m a.s.l. First record for Southeastern Bulgaria. The northern border of the species range is outlined by Mljet Island in Croatia (Devetak 1992), Belogradchik (see above) and Sliven (present material) in Bulgaria, provinces of Ankara (Hölzel 1972), Çorum (Canbulat & Oğuz 2013) and Ardahan (Ari *et al.* 2007) in Anatolia and Vardzia in Georgia (Duelli *et al.* 2015). Range: Croatia, Macedonia, Greece, Bulgaria, Anatolia, Syria, Georgia and Armenia.

Neuroleon assimilis (Navás, 1914)

Bulgaria (Fig. 4, 5). Struma Valley: Kresna Gorge, Stara Kresna Railway Station, 250 m, at light, 1♀, 23.8.1979, JG, coll. NMNHS. Southeastern Bulgaria: Sliven, 650 m, at light, 1♂, 11.8.1996, JN & MBu.

New species for the fauna of Bulgaria. The male from Sliven is identified by Levente Ábráham. Regardless of the poor state of the specimen (the ectoproct is missing), the identification does not give rise to doubt.

There is no information about the habitats of this species in Bulgaria and very scarce ecological data for other parts of the range. *Neuroleon assimilis* has been found in open woods, scrublands, garrigues and arid grasslands with *Olea europaea*, *Ficus carica*, palm trees and Mediterranean vegetation. Kresna and Sliven are the northernmost localities of the species and shift the northern border of its range by 190-200 km northwards from the localities in Greece and Turkey. Range: Greece, Southern Bulgaria, Anatolia, Syria, Armenia and Western Iran.

Neuroleon microstenus (McLachlan, 1898)

Bulgaria. Struma Valley: Kresna Gorge, N of Kresna, 200 m, N 41º45'36.5", E 23º09'20.6", xerothermic meadow on the Struma River bank, netting, 2♀♀, 2.8.2013, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, at light, 1♀, black light, 1♀, 29.7.2013, RD.

In Bulgaria, *Neuroleon microstenus* inhabits woodless areas and pseudomaquis up to 1000 m a.s.l. (usually below 500 m), sea coast beaches and has been found on *Populus* near a beach. It is known from Stara Planina Range, Kresna Gorge and Black Sea Coast. The collected females belong to *Neuroleon microstenus microstenus*. Range of the species: Northwestern Africa, Southern Europe northwards to the southernmost parts of Central Europe in Switzerland, Hungary, Romania and Crimea as well Mediterranean Asia, Transcaucasia and Northern Iran. Another subspecies, *Neuroleon microstenus propinquus* (Navás, 1912), is distributed between Crimea and Northern Iran.

Distoleon tetragrammicus (Fabricius, 1798)

Romania. Transylvania: Rimetea, Alba District, 1♂, 6♀♀, 11-17.7.2015, TK. Oltenia: Drobeta – Turnu Severin, Mehedinţi District, N 44º38', E 22º37', 1♂, 28.5.2002, RD.

Bulgaria. Struma Valley: Kresna Gorge, Sheytandere River, N of Kresna, 200 m, 1♀,

Fig. 4. *Neuroleon assimilis*, ♂ from Sliven (scale bar = 1 cm) (photo A. Larysz).

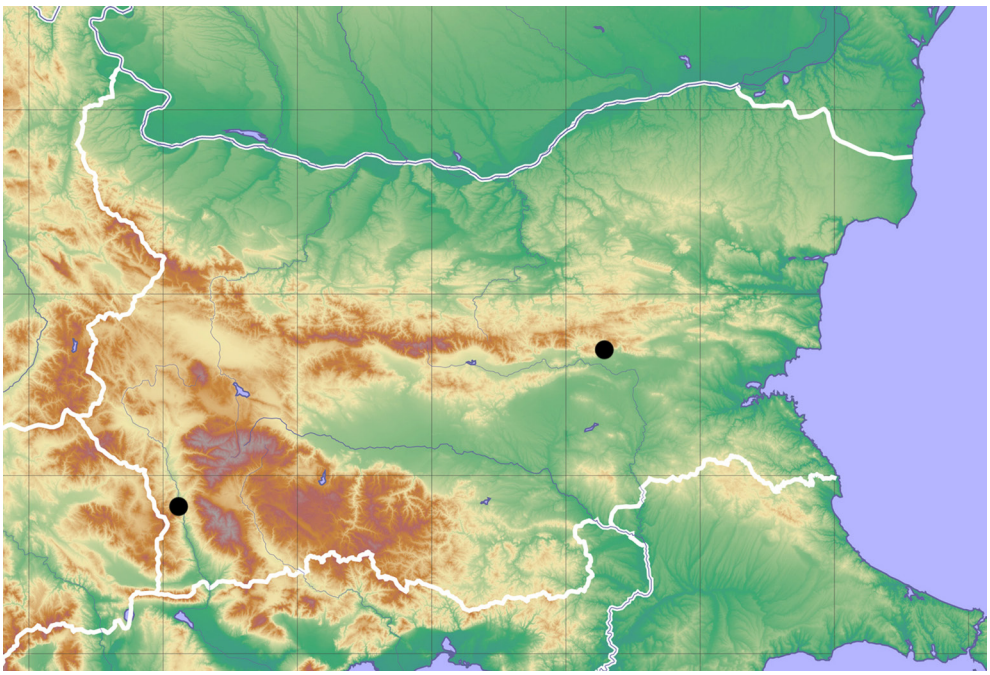

Fig. 5. Distribution of *Neuroleon assimilis* in Bulgaria (Map outline credit: Equestenebrarum, CC-BY-SA-3.0, via Wikimedia Commons).

24-25.6.2001, JN & MBu; Spatovo, W of Melnik, 167 m, N 41º30'10.6", E 23º18'32.3", xerothermic habitat, netting, 3♂♂, 3♀♀, 29.7.2013, RD; Melnik, N 41º31', E 23º24', 1♂, 26-27.6.2000, RD, 2♀♀, 10-16.7.2010, RR & RR; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", at light, 1♂, 29.7.2013, xerothermic meadow, at light, 1♀, 31.7.2013, RD; Kalimantsi, SE of Melnik, at light, 2♀♀, 8.7.2003, JN & MBu. Rhodopes Mts.: Yagodina, S of Devin, 1100 m, 2♂♂, 4♀♀, 17.7.2002, JN & MBu. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 1♂, 12.7.2004, RD. Black Sea Coast: Zlatni Pyasatsi Resort, 12 km NE of Varna, 1♀, July 1984, KD; Byala, 38 km S of Varna, 1♀, 5-14.8.2002, ŁP; Obzor, 44 km S of Varna, 1♂, 2.7.1997, 2♀♀, 4.7.1997, TR.

Widely distributed species in both countries. In Romania, it is the most common myrmeleontid with highest population density in Dobrogea. In Bulgaria, it occurs in lowlands and low parts of the mountains up to 1420 m a.s.l. (mainly below 1000 m). It inhabits steppe and forest-steppe habitats, vineyards and rarely occurs in mixed deciduous forests. First record for Alba District. Range: Central and Southern Europe, Morocco and Western Asia from Anatolia to Eastern Kazakhstan and Northern Iran.

Creoleon plumbeus (Olivier, 1811)

Romania. Dobrogea: Murighiol, Danube Delta, Tulcea District, at light, 1♂, 2♀♀, 26.7.2004, KG.

Bulgaria. Struma Valley: Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, netting, 3♂♂, 1.8.2013, RD; Melnik, N 41º31', E 23º24', 1♂, 26-27.6.2000, RD; Karlanovo, NE of Melnik, 600 m, N 41º32'25.7", E 23º25'33.5", xerothermic meadow, netting, 1♂, 29.7.2013, RD; Rozhen Monastery, NE of Melnik, 650 m, 1♂, 5.8.1996, JN & MBu. Rhodopes Mts.: Arda River Valley, 1♀, 8.8.1996, JN & MBu. Black Sea Coast: Sozopol, grassland, 7♂♂, 5♀♀, 18-19.7.2007, WŻ; Kavatsite Camping, 3 km S of Sozopol, dune on the sea coast, 3♂♂, 17.7.2007, WŻ.

Common species in suitable habitats in both countries. In Romania, it occurs only in eastern and southern parts of the country in sandy terrains of Dobrogea, Southern Moldavia, Muntenia and Oltenia. In Bulgaria, this species is widely distributed in lowlands up to 650 m a.s.l. It prefers there Black Sea beaches and dunes where is very abundant as well as other dry and hot habitats with poor vegetation. Range: Italy (eastern part), Balkan Peninsula, Hungary, Southern Slovakia, Romania, Moldova, Ukraine, Southern Russia and Western Asia eastwards to Siberia, Kazakhstan, Kyrgyzstan, Tajikistan and Afghanistan. An isolated locality is discovered far in the north of this area in Eastern Poland (Dobosz 1996).

Nedroledon anatolicus Navás, 1914

Bulgaria (Fig. 6). Struma Valley: Kalimantsi, SE of Melnik, at light, 1♀, 8.7.2003, JN & MBu.

Only two specimens of *Nedroledon anatolicus* are known from Bulgaria: from Golyama Papia Peak in Strandzha Mts. (Popov 1993) and Belasitsa Chalet in Belasitsa Mts. (Popov 1996). The two localities are mapped by Popov (2002b: Fig. 4 and 6). This species has been found in Bulgaria in an oak forest and a meadow in a forest of *Castanea sativa*. First record for Struma Valley. The northeastern border of the species range runs through Bulgaria. The range of this very rare species covers Southwestern Romania, Macedonia, Northern Greece, Southern Bulgaria and Anatolia (Kačírek 2013, Dvořák & Georgiev 2018). In the whole

Fig. 6. *Nedroledon anatolicus*, ♂ from Kalimantsi, SE of Melnik (scale bar = 1 cm) (photo A. Larysz).

range, only ten specimens from nine localities have been published so far of this species described more than 100 years ago (Kačírek 2013, Badano *et al.* 2017, Dvořák & Georgiev 2018).

Megistopus flavicornis (Rossi, 1790)

Bulgaria. Struma Valley: Blagoevgrad, at light, 1♀, 30.6.2013, JSz; Damyanitsa, S of Sandanski, N 41º30', E 23º15', 1♂, 11♀♀, 9-18.6.2009, ZCh; Melnik, N 41º31', E 23º24', 1♀, 26-27.6.2000, RD, N 41º32', E 23º25', 2♀♀, 9-22.7.2009, ZM. Rhodopes Mts.: Asenova Krepost site S of Asenovgrad, 400 m, 1♂, 16.6.2001, JN & MBu; Arda River Valley, 1♀, 8.8.1996, JN & MBu. Northeastern Bulgaria: Kamenar, 11 km SE of Razgrad, 310 m, N 43º29', E 26º39', at light, 1♂, 12.7.2004, RD. Black Sea Coast: Obzor, 44 km S of Varna, 1♀, 4.7.1997, 1♀, 6.7.1997, TR; Arkutino Lake between Sozopol and Primorsko, 2♀♀, 7-8.6.1998, JN & MBu.

In Bulgaria, *Megistopus flavicornis* is more closely associated with various deciduous and coniferous trees as compared to the other myrmeleontids. It occurs in this country up to 1100 m a.s.l. (mostly below 750 m) and has been found on *Pinus nigra*, *Juniperus excelsa* and *Populus*. Range: Southern Europe northwards to France, Southern Czech Republic, Southern Slovakia, Romania, Ukraine and Southern Russia as well Morocco and Western Asia eastwards to Iran.

Gymnocnemia variegata (Schneider, 1845)

Bulgaria. Struma Valley: Hotovo, SW of Melnik, 200 m, N 41º30'01.88", E 23º20'35.73", grassland hill, netting, 1♂, 1.8.2013, RD.

This species inhabits in Bulgaria treeless areas, pseudomaquis and habitats with isolated oak trees up to 1000 m. The northern border of the species range runs through Bulgaria. Range: Algeria, Southern Europe northwards to Switzerland, Hungary, Southwestern Romania, Crimea in Ukraine and Southwestern Russia as well Western Asia from Anatolia to Kyrgyzstan.

Ascalaphidae

Libelloides lacteus (Brullé, 1832)

Romania. Oltenia: Drobeta – Turnu Severin, Mehedinţi District, 1♂, 1♀, 30.5.1999, JKu.

Bulgaria. Struma Valley: Blagoevgrad, 1♀, 10.7.1980, MB.

The only population of this species in Romania occurs in the environs of Drobeta – Turnu Severin and was discovered between Schela Cladovei (suburb of Drobeta – Turnu Severin) and Gura Văii (less than 5 km west of the outskirts of Drobeta – Turnu Severin) by Belosecu (1973). *Libelloides lacteus* inhabits there steep slopes with xerophilous vegetation, *Syringa vulgaris*, *Cotinus coggygria*, *Crataegus*, *Cornus*, *Pinus* etc. In Bulgaria, this species occurs mainly in the southern part of the country on meadows and treeless rocky slopes and screes mostly up to 600 m a.s.l. (exceptionally up to 1550 m). The localities in Bulgaria are mapped by Popov (2007). First record for Struma Valley. The northern border of the species range on the Balkan Peninsula runs through Krk Island in Northwestern Croatia (Devetak 1992), Drobeta – Turnu Severin (Belosecu 1973) and Veliki Preslav in Northeastern Bulgaria (Táborský 1936). Range: Southern France, Southern Italy, Balkan Peninsula and Anatolia.

Libelloides macaronius (Scopoli, 1763)

Bulgaria. Rhodopes Mts.: Trigrad, S of Devin, 1300 m, N 41º35', E 24º24', 2♀♀, 24.7.2009, RZ.

In Bulgaria, *Libelloides macaronius* is distributed in steppe and forest-steppe habitats on meadows and clearings in deciduous forests of various tree species and coniferous forests of *Picea abies* and *Pinus nigra* in lowlands and mountains up to 1600 m a.s.l. The localities in Bulgaria are mapped by Popov (2007). Range: southeastern parts of Central Europe as well Balkan Peninsula and Western Asia from Anatolia to Kazakhstan and Kyrgyzstan.

DISCUSSION

The specimens of Neuropterida from Romania and Bulgaria, which are kept in museum collections in Poland, belong to 89 species: 5 species of Raphidioptera, 1 species of Megaloptera and 83 species of Neuroptera. In Romania, 37 species or 27% of all the 136 species distributed in this country have been collected. In Bulgaria, 77 species or 53% of all the 144 species occurring in this country have been found. Among them, 25 species in the identified material have been collected in both countries. The share of the families in the studied material and the total number of the species in both countries are shown in Table 1.

The samples from the southern and warm areas of the country with Submediterranean habitats predominate in the material from Bulgaria: Struma Valley (53 species or 69% of the species in Polish collections), Black Sea Coast and Rhodopes Mts. (22 species each). The valley of Struma is the region with the richest neuropterid fauna in Bulgaria. In Romania,

the samples in the regions of Oltenia (22 species) and Transylvania (15 species) are the most numerous. These data show rather the way of Polish entomologists southwards to Bulgaria than the distribution of the species in Romania.

Coniopteryx (*Xeroconiopteryx*) *atlasensis*, *Megalomus tineoides*, *Cunctochrysa cosmia* and *Neuroleon assimilis* are new species for the fauna of Bulgaria. The easternmost locality in the range is reported for *Phaeostigma* (*Phaeostigma*) *pilicollis* and confirmed for *Nothochrysa capitata*. The northernmost locality is registered for the range of *Neuroleon assimilis*. The first records in Bulgaria of some species expand significantly the knowledge of their ranges by shifting their borders: *Coniopteryx* (*Xeroconiopteryx*) *atlasensis* (700 km northwards), *Megalomus tineoides* (290 km northwards) and *Neuroleon assimilis* (190 km northwards). The new localities of the identified material outline the northern border of the range of 10 species, the eastern border of 3 species and the southern range border of 8 species. In addition, the northern border of the range of 8 other species, the western border of 1 species and the southern border of 2 other species of the studied collection run through Bulgaria and Romania. The northern or southern range borders of some species beyond the two countries concerned are outlined according to current knowledge.

Table 1. Number of the species by families in Romania and Bulgaria and in Polish collections from these two countries.

Family	Romania		Bulgaria	
	Species in Polish museums	Species in Romania	Species in Polish museums	Species in Bulgaria
Raphidioptera				
Raphidiidae	2	13	3	14
Inocelliidae	–	1	–	1
Megaloptera				
Sialidae	–	3	1	3
Neuroptera				
Coniopterygidae	8	20	13	23
Sisyridae	–	2	–	4
Nevrorthidae	–	1	–	1
Osmylidae	–	1	1	1
Dilaridae	–	–	1	1
Berothidae	–	1	1	1
Mantispidae	1	2	3	3
Hemerobiidae	11	37	17	35
Chrysopidae	11	34	18	32
Nemopteridae	–	–	1	1
Myrmeleontidae	3	19	16	20
Ascalaphidae	1	2	2	4
Total	**37**	**136**	**77**	**144**

New information about the distribution of some species is the first records in the administrative regions and districts of Romania and in the geographical regions of Bulgaria. *Coniopteryx* (*Coniopteryx*) *tineiformis* and *Coniopteryx* (*Metaconiopteryx*) *lentiae* are reported for the first time for Oltenia Region. Six other records (mainly of Hemerobiidae) are the first ones for four districts of Romania. Two-thirds of them are for Alba District. In Bulgaria, the material contains 29 first records for 10 geographical regions of species from more than half the families in the identified collection. Most species (9) are firstly reported for Struma Valley.

Looking at the whole taxon range, very rare species are *Phaeostigma* (*Pontoraphidia*) *rhodopicum* and *Nedroledon anatolicus*. The former is an Eastern Balkan endemic species. Of the latter, only 10 specimens have been found for more than a hundred years, one third of which in the last five years. Very rare species in Romania are *Libelloides lacteus* and *Coniopteryx* (*Metaconiopteryx*) *lentiae*. The former occurs with a single population in that country. The latter was published from Romania so far only with two specimens, to which four specimens of the present study are added. Very rare species in Bulgaria are *Coniopteryx* (*Holoconiopteryx*) *haematica* and *Sagittalata perla*. The former was known only with one specimen (the present material contains two more specimens); and the latter, with two specimens from that country. Rare species in Romania are *Aleuropteryx umbrata* and *Nothochrysa capitata*; in Bulgaria, *Sympherobius klapaleki* and *Delfimeus irroratus*; rare in both countries is *Mantispa styriaca*. The identified collection contains second records of *Wesmaelius concinnus* in Bulgaria and of the above-mentioned *Coniopteryx* (*Metaconiopteryx*) *lentiae* in Romania and *Coniopteryx* (*Holoconiopteryx*) *haematica* in Bulgaria. Third records in Bulgaria are registered for *Coniopteryx* (*Coniopteryx*) *borealis*, *Pseudomallada zelleri* and *Chrysoperla lucasina*, as well for the above-mentioned *Sagittalata perla* and *Nedroledon anatolicus*. The occurring of *Chrysoperla lucasina* in Bulgaria is poorly studied and this species is most likely widely distributed.

ACKNOWLEDGEMENTS

We are particularly grateful to Dr Levente Ábráham (Rippl-Rónai Museum, Kaposvár, Hungary) for the identification of the specimen from Sliven of *Neuroleon assimilis*. We would also like to thank Prof. Victor Monserrat (Universidad Complutense, Madrid) for confirmation of the identification of *Cunctochrysa cosmia* and for information about the occurrence of *Coniopteryx atlasensis* on the Canary Islands. We are indebted to Prof. Ulrike Aspöck (Natural History Museum, Vienna) and Prof. Horst Aspöck (Institute of Specific Prophylaxis and Tropical Medicine, Vienna) for confirmation of the identification of *Megalomus tineoides* and for sharing their view on the phylogeny of Neuroptera according to various molecular and other studies, and the arrangement of families in a systematic order. Our thanks are also due to all collectors who have deposited their specimens in the collections of the Upper Silesian Museum in Bytom and MIZW, and especially to Tomasz Rynarzewski, Marek Bunalski, Janusz Nowacki, Rafał Ruta and Robert Rosa who have found new species for the fauna of Bulgaria. Sincere thanks go to Prof. John Oswald (Texas A&M University, College Station, USA) for the discussion on the correct spelling of *Phaeostigma rhodopicum* and to Dr Michel Canard (Toulouse) for information concerning Chrysopidae in Romania. Finally, cordial thanks go to MSc Assen Ignatov (NMNHS) who helped in preparing the maps.

REFERENCES

Anonymous. 2014. Planul de management al Rezervaţiei Biosferei Delta Dunării. http://www.sgg.ro/legislativ/docs/2014/01/w2nphs85kcdr0b1zgj3f.pdf. Last accessed 23 April 2018.

Ari I., Aktaş M., Kiyak S. 2007. Contributions to the fauna of Turkish Myrmeleonidae (Neuroptera, Insecta) from Ardahan, Iğdir, and Kars. *Turkish Journal of Zoology* 31(3): 229–234.

Aspöck H., Aspöck U. 1966. Studien an europäischen und kleinasiatischen Arten des Genus *Raphidia* L. (Insecta, Raphidiodea). *Mitteilungen der Schweizerischen Entomologischen Gesellschaft* 39(1–2): 33–48.

Aspöck H., Aspöck U., Hölzel H. (unter Mitarbeit von H. Rausch). 1980. Die Neuropteren Europas. Eine zusammenfassende Darstellung der Systematik, Ökologie und Chorologie der Neuropteroidea (Megaloptera, Raphidioptera, Planipennia) Europas. Goecke & Evers, Krefeld: Band I: 1–495, Band II: 1–355.

Aspöck H., Aspöck U., Rausch H. 1991. Die Raphidiopteren der Erde. Eine monographische Darstellung der Systematik, Taxonomie, Biologie, Ökologie und Chorologie der rezenten Raphidiopteren der Erde, mit einer zusammenfassenden Übersicht der fossilen Raphidiopteren (Insecta: Neuropteroidea). Goecke & Evers, Krefeld: Band I: 1–730, Band II: 1–550.

Aspöck H., Hölzel H., Aspöck U. 2001. Kommentierter Katalog der Neuropterida (Insecta: Raphidioptera, Megaloptera, Neuroptera) der Westpaläarktis. *Denisia* 2: 1–606.

Badano D., Almeida J., Letardi A. 2011. Redescoberta de Megaloptera em Portugal Continental após um século, uma ordem „renascida" para o país. *Arquivos Entomolóxicos* 5: 53–54.

Badano D., Aspöck H., Aspöck U. 2017. Taxonomy and phylogeny of the genera *Gymnocnemia* Schneider, 1845, and *Megistopus* Rambur, 1842, with remarks on the systematization of the tribe Nemoleontini (Neuroptera, Myrmeleontidae). *Deutsche Entomologische Zeitschrift* 64(1): 43–60. DOI: 10.3897/dez.64.11704.

Bartoš E. 1967. Die Raphidiopteren der Entomologischen Abteilung des Naturwissenschaftlichen Museums in Praha. *Acta entomologica Musei Nationalis Pragae* 37: 325–345.

Beloescu T. 1973. Ascalaphus ottomanus Germar în regiunea Porţilor de Fier. *Revista Muzeelor* 10(2): 135–136.

Blaik T., Dobosz R. 2010. Lacewings (Neuroptera) of the Polish Baltic coast with remarks on *Wesmaelius* (*Kimminsia*) *balticus* (Tjeder, 1931) – a new species of Hemerobiidae to the fauna of Poland, In: Devetak D., Lipovšek S., Arnett A. (Eds). Proceedings of the Tenth International Symposium on Neuropterology. Piran, Slovenia, 22–25 June 2008. Faculty of Natural Sciences and Mathematics, University of Maribor, Maribor: 97–112.

Buresch I. 1936. Beitrag zum Studium der Neuropterenfauna Bulgariens (Insecta, Neuroptera). *Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia* 9: 135–150. [In Bulgarian].

Buresch I. 1940. Referate und Mitteilungen. *Mitteilungen der Bulgarischen Entomologischen Gesellschaft in Sofia* 11: 243–249. [In Bulgarian].

Canbulat S., Oğuz M. 2013. Çorum ve Amasya illeri Neuroptera (Insecta) faunası (Turkey). *Nevşehir bilim ve teknoloji dergisi* 3(2): 37–55.

Devetak D. 1992. Megaloptera, Raphidioptera and Planipennia (Neuropteroidea, Insecta) of Croatia. *Znanstvena Revija* 4(1): 89–114.

Devetak D., Jakšić P., Koren T., Ivajnšič D. 2015a. Two sibling green lacewing species, *Chrysopa pallens* and *Chrysopa gibeauxi* (Insecta: Neuroptera: Chrysopidae) in Slovenia and western Balkan countries. *Annales*, *Annals for Istrian and Mediterranean Studies* 25(1): 47–54.

Devetak D., Klokočovnik V., Rausch H., Janžekovič F. 2015b. Fauna of the Neuropterida (Raphidioptera, Neuroptera) of the Protected Area Jasen, Macedonia: a summer flash. *Turkish Journal of Zoology* 39(1): 15–27. DOI: 10.3906/zoo-1305-43.

Devetak D., Podlesnik J., Klokočovnik V., Janžekovič F. 2013. Antlions (Insecta: Neuroptera: Myrmeleontidae) of Albania. *Turkish Journal of Zoology* 37(3): 362–366. DOI: 10.3906/zoo-1209-23.

Devetak D., Rausch H. 2016. Checklist of lacewings (Neuropterida: Raphidioptera, Megaloptera, Neuroptera) of Albania. *Acta zoologica bulgarica* 68(4): 457–467.

Devetak D., Slavevska-Stamenković V., Sivec I. 2016. Alderflies (Insecta: Megaloptera: Sialidae) from Serbia and Macedonia, with notes on their occurrence in the neighbouring Balkan countries. *Acta zoologica bulgarica* 68(1): 39–42.

Dobosz R. 1996. Two species of lacewings (Neuropteroidea) from Białowieża Primaeval Forest new to the fauna of Poland. *Acta entomologica silesiana* 4(1–2): 19–23.

Dobosz R. 2007. Contribution to the knowledge of snakeflies (Raphidioptera) of Turkey. *Annals of the Upper Silesian Museum* (*Entomology*) 14–15: 43–58.

Dorokhova G. 1987. [25. Order Neuroptera – Lacewings], In: Medvedev G. (Ed.). [Identification key to the insects of the European part of the USSR. Volume 4. Sixth part. Alderflies, snakeflies, lacewings, scorpionflies, caddisflies]. Nauka, Leningrad: 36–96. (In Russian). [English translation: Dorokhova G. 1998. Order Neuroptera, In: Medvedev G. (Ed.). Keys to the insects of the European part of the USSR. Vol. 4. Part 6: Megaloptera, Raphidioptera, Neuroptera, Mecoptera, Trichoptera. Amerind Publishing Co., New Delhi: 40–98].

Duelli P., Bolt D., Henry Ch. 2015. Neuroptera of the Caucasian Republic of Georgia. *Entomological News* 124(4): 229–244. DOI: 10.3157/021.124.0401.
Dvořák L. 2016. *Sialis fuliginosa* (Megaloptera), the first alderfly to be recorded from Albania. *Klapalekiana* 52(1–2): 3.
Dvořák L., Georgiev D. 2018. New and interesting records of Neuroptera from Samothraki Island, North Aegean Islands, Greece. *Parnassiana Archives* 6: 3–6.
Hölzel H. 1972. Die Neuropteren Vorderasiens. IV. Myrmeleonidae. *Beiträge zur naturkundlichen Forschung in Südwestdeutschland*, *Beiheft* 1: 3–103.
Hölzel H. 1973. Zur Revision von Typen europäischer *Chrysopa*-Arten (Planipennia, Chrysopidae). *Revue suisse de Zoologie* 80(1): 65–82.
Kačírek A. 2013. Contribution to the faunistics of antlions (Neuroptera: Myrmeleontidae) of Bulgaria, Macedonia and Greece. *Klapalekiana* 49(3–4): 189–196.
Kis B. 1964. Eine neue *Aleuropteryx*-Art aus Rumänien (Neuroptera, Coniopterygidae). *Reichenbachia* 4(24): 227–230.
Kis B. 1965a. Eine neue *Coniopteryx*-Art aus Rumänien (Neuroptera, Coniopterygidae). *Reichenbachia* 5(35): 295–298.
Kis B. 1965b. Beiträge zur Kenntnis der Neuropterenfauna Rumäniens. *Folia entomologica hungarica* 18(19): 359–366.
Kis B. 1972. Ord. Neuroptera (L'entomofaune du „grind" de Caraorman, Delta du Danube). *Travaux du Muséum d'Histoire Naturelle „Grigore Antipa"* 12: 125–130.
Kis B. 1975. Neuroptera, In: Ionescu M. (Ed.). Fauna. Grupul de cercetări complexe "Porţile de Fier". Seria monografică. Editura Academiei Republicii Socialiste România, Bucureşti: 98–100.
Kis B. 1984. L'ordre Raphidioptera (Insecta) en Roumanie. *Travaux du Muséum d'Histoire Naturelle „Grigore Antipa"* 26: 85–97.
Kis B. 1992. Berotha fulva (Costa) (Neuroptera, Berothidae), espèce nouvelle pour la faune de Roumanie. *Travaux du Muséum d'Histoire Naturelle „Grigore Antipa"* 32: 73–75.
Kis B., Bobîrnac B. 1971. Contribuţii la cunoaşterea Mirmeleonidelor (Neuroptera) din Oltenia. *Studii şi Cercetări Craiova* 1971: 157–159.
Kis B., Nagler C., Măndru C. 1970. Neuroptera (Planipennia), In: Botnariuc N. (Ed.). Fauna Republicii Socialiste România. Insecta. Volumul VIII. Fascicula 6. Editura Academiei Republicii Socialiste România, Bucureşti: 1–345.
Klapálek F. 1894. Descriptions of a new species of *Raphidia*, L., and of three new species of Trichoptera from the Balkan Peninsula, with critical remarks on *Panorpa gibberosa*, McLach. *Transactions of the Entomological Society of London* 1894(4): 489–495.
Klimaszewski J., LeSage L., Savard K. 2009. First record of adventive species *Micromus variegatus* (Fabricius) from eastern Canada (Neuroptera, Hemerobiidae). *ZooKeys* 27: 1–6. DOI: 10.3897/zookeys.27.220.
Klokočovnik V., Devetak D., Klenovšek T., Podlesnik J. 2014. Contribution to the knowledge of brown lacewings from Albania (Neuroptera, Hemerobiidae). *Spixiana* 37(2): 233–237.
Kovanci O., Canbulat S., Kovanci B. 2014. The brown lacewings (Neuroptera, Hemerobiidae) of northwestern Turkey with new records, their spatio-temporal distribution and harbouring plants. *Revista Brasileira de Entomologia* 58(2): 147–156. DOI: http://dx.doi.org/10.1590/S0085-56262014000200006.
Krenn H., Gereben-Krenn B., Steinwender B., Popov A. 2008. Flower visiting Neuroptera: Mouthparts and feeding behaviour of *Nemoptera sinuata* (Nemopteridae). *European Journal of Entomology* 105(2): 267–277.
Leraut P. 1988. *Cunctochrysa bellifontensis* n. sp.: une espèce de chrysope nouvelle pour la science découverte en forêt de Fontainebleau (Neur. Chrysopidae). *Bulletin de l'Association des Naturalistes de la Vallée du Loing et du Massif de Fontainebleau* 64(4): 230–235.
Leraut P. 1989. Étude de la variation subspécifique de *Metachrysopa pallens* (Rambur 1838) n. comb. (Neuroptera: Chrysopidae). *Revue française d'Entomologie* (*N.S.*) 11(3): 105–108.
Leraut P. 1992. *Chrysopa gibeauxi* (Leraut) stat. rev., une espèce distincte (Neur. Chrysopidae). *Entomologica Gallica* 3(1): 24–26.
Letardi A. 2017. Neuropteroidea home page. Distribuzione regionale. http://neurotteri.casaccia.enea.it/geografica.pdf. Last accessed 25 June 2018.
Letardi A., Nicoli Aldini R., Pantaleoni R. 2010. The Neuropterida of Triveneto (Northern Italy): an updated faunal checklist with some zoogeographical remarks, In: Devetak D., Lipovšek S., Arnett A. (Eds). Proceedings of the Tenth International Symposium on Neuropterology. Piran, Slovenia, 22–25 June 2008. Faculty of Natural Sciences and Mathematics, University of Maribor, Maribor: 181–189.
Lock K., San Martin G. 2013. Checklist of the Belgian Neuroptera. *Bulletin de la Société royale belge d'Entomologie* 149(3): 233–239.
Meinander M. 1963. Coniopterygidae (Neuroptera) from Morocco. *Notulae entomologicae* 43: 92–109.
Monserrat V. 2011. Sobre algunas especies de neurópteros de la Península Ibérica y de las Islas Canarias de posición taxonómica problemática o con citas dudosas o cuestionables (Insecta, Neuroptera: Megaloptera, Planipennia). *Boletin de la Sociedad Entomológica Aragonesa* 49: 153–178.

Monserrat V. 2014. Los megalópteros de la Península Ibérica (Insecta, Neuropterida, Megaloptera, Sialidae). *Graellsia* 70(2): e009, 1–24. DOI: http://dx.doi.org/10.3989/graellsia.2014.v70.111.
Monserrat V. 2016. Los coniopterígidos de la Península Ibérica e Islas Baleares (Insecta: Neuropterida, Neuroptera: Coniopterygidae). *Graellsia* 72(2): e047, 1–115. DOI: http://dx.doi.org/10.3989/graellsia.2016.v72.157.
Monserrat V., Acevedo F., Pantaleoni R. 2014. Nuevos datos sobre algunas especies de crisópidos de la Península Ibérica, Islas Baleares e Islas Canarias (Insecta, Neuroptera, Chrysopidae). *Graellsia* 70(1): e002, 1–38. DOI: http://dx.doi.org/10.3989/graellsia.2014.v70.100.
Navás L. 1918. Insecta nova. IV series. *Memorie della Pontificia accademia romana dei Nuovi Lincei*, Serie seconda 4: 13–23.
Paulian M. 2002. Recent additions to the green lacewing fauna of Romania (Neuroptera: Chrysopidae). *Acta Zoologica Academiae Scientiarum Hungaricae* 48(Suppl. 2): 265–269.
Paulian M., Canard M., Thierry D., Ciubuc C. 2001. Survey of green lacewings in southern Transylvania, Rumania, with some ecological notes (Neuroptera: Chrysopidae). *Journal of Neuropterology* 3[2000]: 25–31.
Plant C. 1993. *Cunctochrysa bellifontensis* Leraut, 1988 (Neuroptera: Chrysopidae), a lacewing new to Britain, with a note on its identification. *Entomologist's Gazette* 44(1): 41–44.
Popov A. 1977. Neuropteren aus der bulgarischen Schwarzmeerküste, In: Peshev G. (Ed.). Terrestrial fauna of Bulgaria. Materials. Publishing House of the Bulgarian Academy of Sciences, Sofia [1976]: 5–34. [In Bulgarian].
Popov A. 1981. Die Megalopteren Bulgariens. *Acta zoologica bulgarica* 17: 63–65.
Popov A. 1983. A contribution to the studies on family Coniopterygidae (Neuroptera) in Bulgaria. *Acta zoologica bulgarica* 23: 62–66. [In Bulgarian].
Popov A. 1986a. Coniopterygiden aus Bulgarien (Neuroptera). *Entomologische Nachrichten und Berichte* 30(4): 167–171.
Popov A. 1986b. Hemerobiiden aus Bulgarien (Neuroptera). *Mitteilungen aus dem Zoologischen Museum in Berlin* 62(2): 323–331.
Popov A. 1990a. Zur Verbreitung der Chrysopiden (Neuroptera) in Bulgarien. *Acta zoologica bulgarica* 39: 47–52.
Popov A. 1990b. Beitrag zur Kenntnis der Neuropteren des Witoscha Gebirges, In: Botev B. (Ed.). Fauna of Southwestern Bulgaria. Part 3. Publishing House of the Bulgarian Academy of Sciences, Sofia: 78–87. [In Bulgarian].
Popov A. 1991. Baum- und strauchbewohnende Neuropteren in Bulgarien. *Acta zoologica bulgarica* 41: 26–36.
Popov A. 1993. Raphidiopteren und Neuropteren aus Bulgarien in den Sammlungen des Nationalmuseums in Prag. *Historia naturalis bulgarica* 4: 16–28.
Popov A. 1996. Zur Verbreitung der Myrmeleontiden in Bulgarien (Neuroptera). *Historia naturalis bulgarica* 6: 37–47.
Popov A. 1998. Insects of Bulgaria: Blattodea, Mantodea, Isoptera, Orthoptera, Dermaptera, Embioptera, Megaloptera, Raphidioptera, Neuroptera, Mecoptera, In: Meine C. (Ed.). Bulgaria's biological diversity: conservation status and needs assessment. Vol. I and II. Biodiversity Support Program, Washington: 223–227, 248–250.
Popov A. 2000. Entomofaunistic diversity of the Central Balkan National Park. Orthopteroidea, Neuropteroidea, Mecoptera, In: Sakalian M. (Ed.). Biological diversity of the Central Balkan National Park. Pensoft, Sofia: 342, 346, 359–362, 540–542, 571–573.
Popov A. 2001. The snakeflies and the lacewing insects (Insecta: Raphidioptera and Neuroptera) of the Kresna Gorge (SW Bulgaria), In: Beron P. (Ed.). Biodiversity of Kresna Gorge (SW Bulgaria). National Museum of Natural History, Institute of Zoology, Sofia: 131–143. [In Bulgarian].
Popov A. 2002a. Rare Chrysopidae and Hemerobiidae (Neuroptera) from Bulgaria. *Historia naturalis bulgarica* 14: 73–78.
Popov A. 2002b. Zoogeographical analysis of Neuroptera in Bulgaria. *Acta Zoologica Academiae Scientiarum Hungaricae* 48(Suppl. 2): 271–280.
Popov A. 2007. Distribution of the families of Neuroptera with low species diversity in Bulgaria. *Annali dei Museo civico di Storia naturale di Ferrara* 8[2005]: 117–130.
Rausch H., Weissmair W. 2007. *Sisyra bureschi* nov. sp. und *S. corona* nov. sp. – zwei neue Schwammhafte und Beiträge zur Faunistik der Sisyridae (Insecta, Neuroptera) Südosteuropas. *Linzer biologische Beiträge* 39(2): 1129–1149.
Saure Ch. 1989. Beitrag zur Kenntnis der Neuropterenfauna Jugoslawiens und Griechenlands (Insecta, Planipennia). *Entomofauna* 10(4): 33–43.
Skolka M., Carp J., Grigore S., Stanciu C. 2007. Evaluarea biodiversităţii populaţiilor de insect din Parcul Naţional Munţii Măcinului. http://www.parcmacin.ro/c/document_library/get_file?uuid=6c8765b6-7fa5-4f5c-aa7e-34669fa244b8&groupId=86738. Last accessed 23 April 2018.
Sziráki Gy. 1996. Ecological investigation of the Neuropteroidea Sziráki of oak forests in Hungary (Insecta: Raphidioptera, Neuroptera), In: Canard M., Aspöck H., Mansell M. (Eds). Pure and applied research in Neuropterology. Proceedings of the Fifth International Symposium on Neuropterology. Cairo, Egypt, 2–6 May 1994. Sacco, Toulouse: 229–232.

Sziráki Gy. 2000. Two interesting antlion (Neuroptera: Myrmeleontidae) species from Romania. *Entomologica Romanica* 4[1999]: 73–75.
Sziráki Gy. 2008. A Nevrorthidae Nakahara, 1915 (Insecta: Neuroptera) család előfordulása a Cserna-hegységben. *Acta Siculica* 2008: 87–90.
Sziráki Gy., Ábrahám L., Szentkirályi F., Papp Z. 1992. A check-list of the Hungarian Neuropteroidea (Megaloptera, Raphidioptera, Planipennia). *Folia entomologica hungarica* 52[1991]: 113–118.
Táborský K. 1936. Monografické zpracováni druhu *Ascalaphus ottomanus* Germar. *Sborník entomologického oddělení Národního muzea v Praze* 14: 133–144.
Tăuşan I., Popescu M., Pintilioaie A. 2018. *Mantispa styriaca* (Poda, 1761) (Neuroptera: Mantispidae) in Romania – a new record after a half of century. *Travaux du Muséum National d'Histoire Naturelle "Grigore Antipa"* 61(1): 43–44. DOI: 10.2478/travmu-2018-0001.
Thierry D., Canard M. 2018. Three green lacewings new to the Bulgarian fauna (Neuropterida: Chrysopidae). *Entomofauna* 39(5): 83–86.
Thierry D., Cloupeau R., Jarry M., Canard M. 1998. Discrimination of the West-Palaearctic *Chrysoperla* Steinmann species of the *carnea* Stephens group by means of claw morphology (Neuroptera, Chrysopidae). *Acta Zoologica Fennica* 209: 255–262.
Tillier P., Thierry D., Dobosz R., Canard M. 2014. *Chrysopa gibeauxi* (Leraut, 1989): reinstatement as valid species and remarks on its distribution (Neuropterida, Chrysopidae). *Bulletin de la Société entomologique de France* 119(4): 521–528.
Wang Y., Liu X., Garzón-Orduña I., Winterton Sh., Yan Y., Aspöck U., Aspöck H., Yang D. 2017. Mitochondrial phylogenomics illuminates the evolutionary history of Neuropterida. *Cladistics* 33(6): 617–636 [online published 2016]. DOI: 10.1111/cla.12186.
Zelený J. 1964a. *Aleuropteryx umbrata* n. sp., a new species of Neuroptera from Moldavian SSR (Neuroptera, Coniopterygidae). *Časopis Československé společnosti entomologické* 61(4): 327–329.
Zelený J. 1964b. Ergebnisse der Albanien-Expedition 1961 des Deutschen Entomologischen Institutes. 24. Beitrag. Neuroptera. *Beiträge zur Entomologie* 14(3-4): 323–336. DOI: 10.21248/contrib.entomol.14.3-4.323-336.

Accepted: 29 September 2018; published: 3 October 2018
Licensed under a Creative Commons Attribution License http://creativecommons.org/licenses/by/4.0/