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Rare Chrysopidae and Hemerobiidae (Neuroptera) from Bulgaria

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The faunistic diversity of Neuroptera is well studied as a result of intensive investigations in the last twenty years. Reviews of the families rich in species have been published: Chrysopidae (POPOV, 1990, 1991), Coniopterygidae (POPOV, 1983, 1986a), Hemerobiidae (POPOV, 1986b, 1991) and Myrmeleontidae (POPOV, 1996). Besides the taxa reported in these reviews, another four species have been found in Bulgaria: *Peyerimhoffina gracilis* (Chrysopidae), *Wesmaelius quadrifasciatus*, *Wesmaelius tjederi*, *Micromus angulatus* (Hemerobiidae). They have been published only preliminarily and, except for *M. angulatus*, without mentioning that they (the genus *Peyerimhoffina* too) are new to the fauna of Bulgaria. The aim of the present paper is to give detailed data on the records of these species.

Chrysopidae

Peyerimhoffina gracilis (Schneider, 1851)

B u l g a r i a (Fig. 1). UTM 34TGM18, Rila Mts, Borovets: 1 ♀, 1300 m, 1.9.1967, I. Buresch; 1 ♀, 1350 m, on *Picea abies*, 27.7.1968, A. Popov; Shumnatitsa Chalet, 3 km NE of Borovets, 1330 m, on *Picea abies*, 5 ♂♂, 1 ♀, 9.8.1986, A. Popov. UTM 35TKG72, Rhodopes Mts, Orfei Chalet, 1200 m, on *Pinus sylvestris*, 1 ♂, 23.9.1979, V. Bayryamova. The only representative of the genus *Peyerimhoffina*, preliminarily reported for Bulgaria without details about the collected material by Popov (Orthopteroidea and Neuropteroidea in: HUBENOV et al., 1998, 2000a).

R a n g e. Central and South Europe, Morocco, Algeria, Anatolia and the Caucasus. On the Iberian Peninsula *P. gracilis* occurs only on the southern slopes of the Pyrenees (MONSERRAT et al., 1994) in the provinces of Huesca and Lerida. In Anatolia it is found in its northwestern (ASPÖCK et al., 2001) and northeastern parts (ASPÖCK et al., 1980: map 172). In the Caucasus it is recorded in the Teberdinskiy Nature Reserve in the Karachayevo-Cherkesskaya Republic (South Russia) according to DOROKHOVA (1979) and in the Naxçivan (Nakhichevan) Territory in Azerbaijan (KURBANOV, 1971). In my opinion the latter record is doubtful because the species has been established by KURBANOV (1971) on cereals. ASPÖCK and HÖLZEL (1996) have also

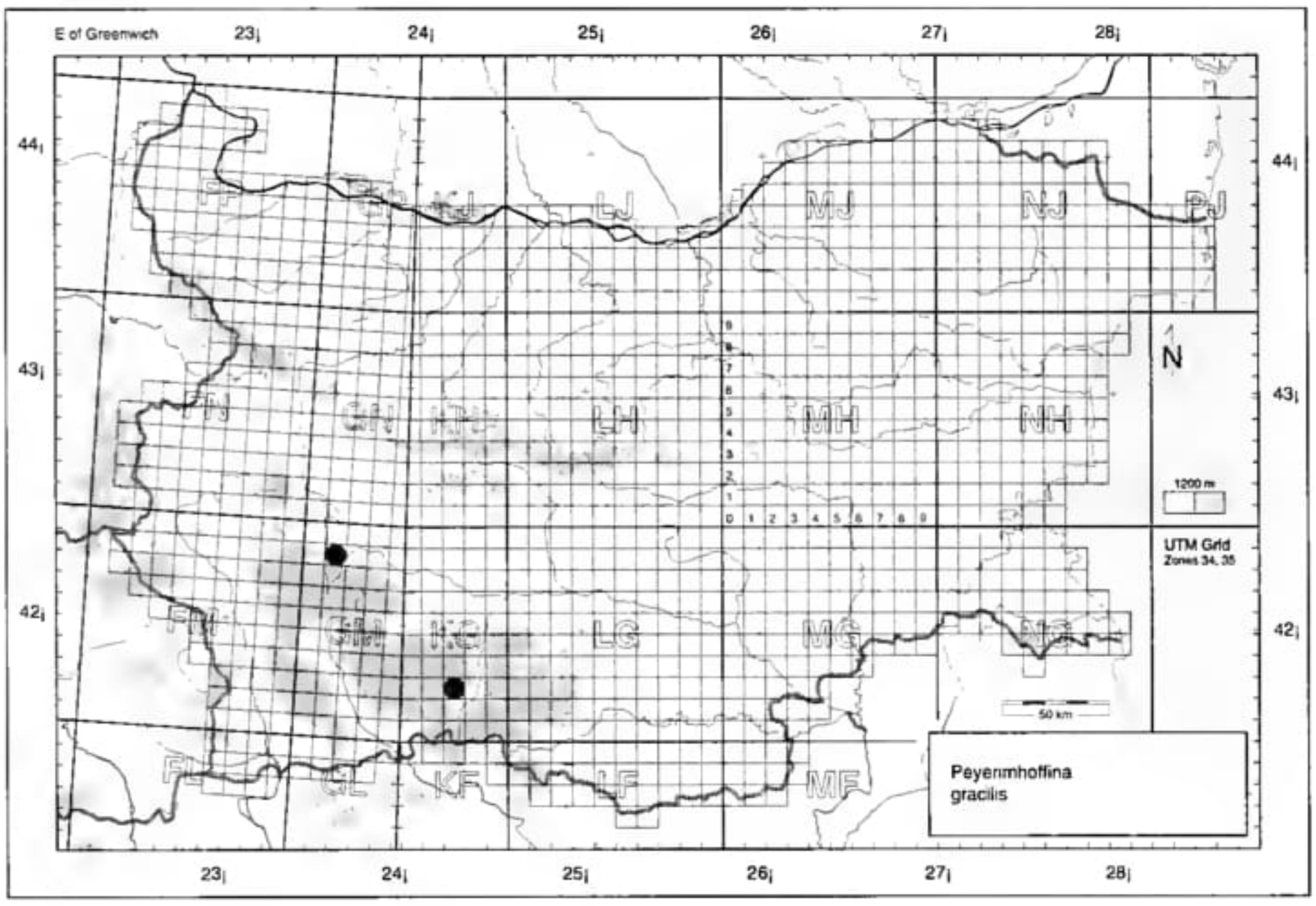

Fig. 1. Distribution of *Peyerimhoffina gracilis* in Bulgaria

mentioned Tunisia in the range of *P. gracilis* (the country has not been noted by ASPÖCK et al., 2001). A Central-European–Mediterranean–Caspian species. In Bulgaria it is a mountain species but in other countries in South Europe it occurs in lowlands as well (PANTALEONI et al., 1994). The Bulgarian populations are isolated in the mountains from the Central European and other South European populations. A representative of a not numerous in species ancient genus which had differentiated a long time ago. The range of *P. gracilis* is isolated from the ranges of the remaining species in the genus.

E c o l o g y. On conifers. A mountain species. Hygrophilous and cold-loving. One of few chrysopids hibernating as imago. Probably a monovoltine species in Bulgaria. The eventual single generation is very likely to fly from the end of July until next spring.

Hemerobiidae

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

B u l g a r i a (Fig. 2). UTM 34TGM18, Rila Mts, Borovets, 1350 m, 1 ♀, 29.7.1971, I. Buresch. Reported preliminarily for the country without concrete data on the only specimen by Popov (Orthopteroidea and Neuropteroidea in: HUBENOV et al., 1998, 2000a).

R a n g e. North and Central Europe, mountains of the Balkan Peninsula (Durmitor Mts, Rila Mts, North Greece); Northeastern Anatolia and North Asia. Siberian faunal element of a boreomontane distribution. As the species occurs on conifers, its range reaches the extreme north of Europe and Asia.

E c o l o g y. The only specimen comes from a coniferous forest predominated by *Picea abies* mixed with *Abies alba* and single trees of *Pinus sylvestris*. In the range of *Larix decidua* (the Alps, the Carpathians), *W. quadrifasciatus* occurs mostly on this tree species (there are no data for the inhabited vegetation in Asia). The absence of larch on the Balkan Peninsula is most likely the reason for the very rare occurrence of the species in isolated

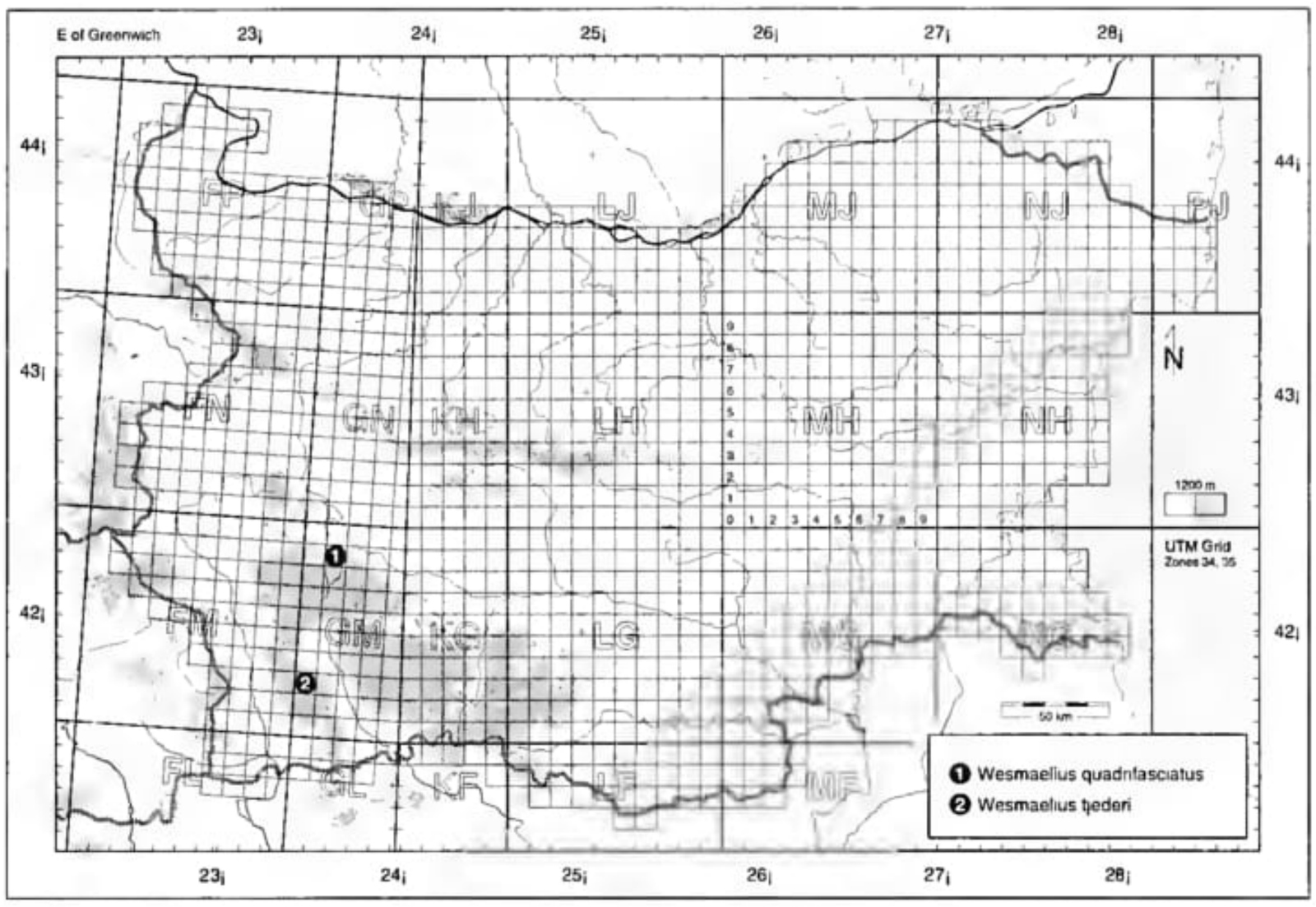

Fig. 2. Distribution of *Wesmaelius quadrifasciatus* and *Wesmaelius tjederi* in Bulgaria

localities. A mountain species. Hygrophilous and cold-loving. Monovoltinism can be presumed in Bulgaria.

***Wesmaelius* (*Kimminsia*) *tjederi* (Kimmins, 1963)**

B u l g a r i a (Fig. 2). UTM 34TGM02, Pirin Mts, Banderitsa Chalet, 1800 m, on light: 1 ♂, 21.7.1965 and 1 ♂, 4.8.1967, H. Lukov. The genitalia of both specimens have been examined. A preliminary report about its occurrence in Bulgaria without details was given by Popov (Orthopteroidea and Neuropteroidea in: HUBENOV et al., 1998). The Pirin Mts are the easternmost locality of *W. tjederi*.

R a n g e. The Alps, Abruzzi Mts., Etna Mts, Szalafö in Western Hungary, the South Carpathians (the Transylvanian Alps), Durmitor Mts, Pirin Mts and Olympus Mts. A Central-European–Mediterranean species. Its disjunctive range covers parts on both sides of the borderline between the Eurosiberian Subregion and the Mediterranean Subregion. The origin of *W. tjederi* is very likely found in the northern part of its recent range, i.e. the Alps. It is placed in this category for chorological reasons but its ecological characteristics distinguish it from the other Central-European– Mediterranean species, e.g. *Euroleon nostras* (Geoffroy, 1785), and close to the mountain Central European species from the same family, e.g. *Wesmaelius fassnidgei* (Killington, 1933) and *Hemerobius schedli* Hölzel, 1970.

E c o l o g y. The material has been collected on light in a habitat of *Pinus heldreichii* near the timberline. A mountain species. *Wesmaelius tjederi* and *Hemerobius schedli* are the only species of Neuroptera not found below 1800 m in Bulgaria. Within its range the former inhabits the coniferous belt and the subalpine belt of the mountains. Hygrophilous and cold-loving. The number of generations in Bulgaria of this species and *W. quadrifasciatus* is not clarified because of the availability of 1-2 specimens only. As in other species occurring in Bulgaria only in the mountains, e.g. *Sympherobius*

fuscescens (Wallengren, 1863) and *Helicoconis lutea* (Wallengren, 1871), development with one generation can be expected.

Micromus angulatus (Stephens, 1836)

B u l g a r i a (Fig. 3). UTM 35TMJ00, Danube Plain, Koprivets near Byala, 200 m, on herbaceous vegetation, 1 ♀, 5.8.1978, E. Popova. UTM 35TLH14, Central Stara Planina Range, Troyanska Mts, Cherni Osam near Troyan, 600 m, on herbaceous vegetation, 1 ♀, 9.8.1985, A. Popov, E. Popova. UTM 34TGM18, Rila Mts, Borovets: 1 ♀, 1350 m, on herbaceous vegetation, 29.7.1971, I. Buresch and 1 ♀, 1300 m, on light, 6.8.1974, A. Popov. Known also from the Kresna Gorge (POPOV, 2001), UTM 34TFM72. The finding of the species in the Central Stara Planina and Rila was reported preliminarily without mentioning of concrete localities by Popov (Orthopteroidea and Neuropteroidea in: HUBENOV et al., 2000a, 2000b).

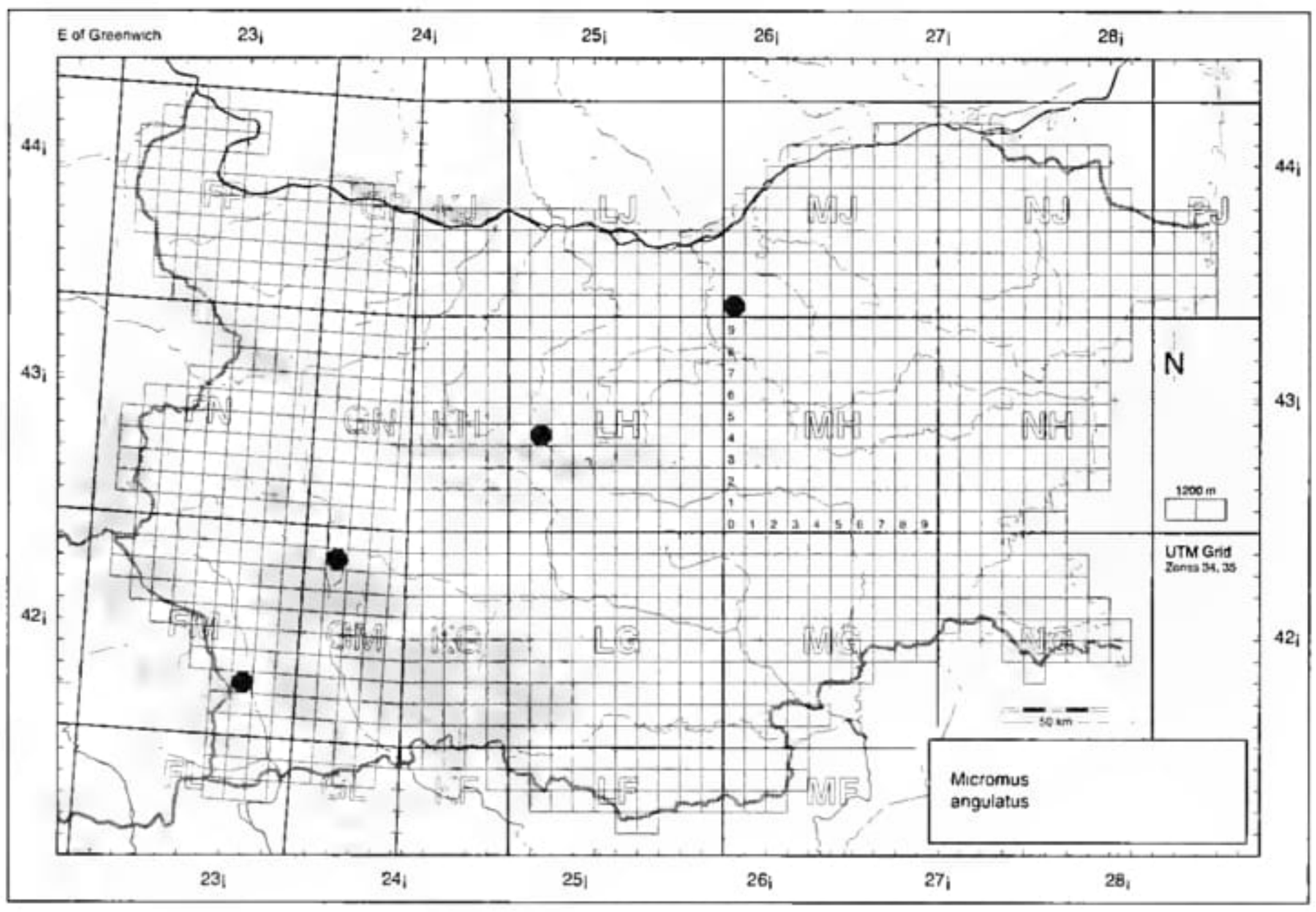

Fig. 3. Distribution of *Micromus angulatus* in Bulgaria

R a n g e. The whole Holarctic (Europe, Morocco, North Asia and North America). A Siberian–Nearctic (Holarctic) species, autochthonous in North America.

E c o l o g y. *M. angulatus* inhabits herbaceous vegetation in forest-steppe and woodland habitats. A species with a wide altitudinal range. More than one generation have been observed in other parts of its range.

* * *

The family Chrysopidae is represented in the Bulgarian fauna by 28 species: 25 species according to POPOV (1990, 1991), *Chrysoperla kolthoffi* (Navás, 1927) sensu THIERRY et al. (1992) and *Chrysoperla lucasina* (Lacroix, 1912) sensu THIERRY et al. (1992), both species reported for Bulgaria by THIERRY et al. (1998), and *Peyerimhoffina gracilis*. The richest family among

Neuroptera in Bulgaria is Hemerobiidae with 34 species: 31 species according to POPOV (1986b, 1991) and the three species in the present paper. The number of species in the other two families with relatively greater faunistic diversity remains unchanged: Coniopterygidae - 22 species (POPOV, 1986a) and Myrmeleontidae - 18 species (POPOV, 1996). ASPÖCK et al. (2001) report 16 species of Myrmeleontidae for Bulgaria. They have not mentioned *Delfimeus irroratus* (Olivier, 1811) and *Nicarinus poecilopterus* (Stein, 1863) although they have included POPOV (1996) with the only data on distribution in Bulgaria in the synonymous lists of both species.

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Редки видове от семействата Chrysopidae и Hemerobiidae (Neuroptera) от България

Алекси ПОПОВ

(Р е з ю м е)

Съобщават се подробни данни за първите находки в България на *Peyerimhoffina gracilis* (Боровец в Рила и хижа Орфей в Родопите), *Wesmaelius quadrifasciatus* (Боровец), *Wesmaelius tjederi* (хижа Бъндерица в Пирин; най-източно находище в ареала на вида) и *Micromus angulatus* (Копривец в Североизточна България, Черни Осъм в Централна Стара планина, Боровец в Рила и Кресненски пролом). С тях броят на установените в България видове от семейство Chrysopidae нараства на 28, а от Hemerobiidae - на 34 вида.