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Update of distribution records of Mydaeinae (Diptera: Muscidae) from Bulgaria

Eberhard Zielke**Abstract**

Records from Bulgaria are given for 22 species of the subfamily Mydaeinae. The numbers of identified species of the genera are for *Graphomyia* (1), *Gymnodia* (3), *Hebecnema* (4), *Mydaea* (12) and *Myospila* (2) species respectively. Two species of *Gymnodia* and two of *Mydaea* are newly recorded. Including the present contribution, there are now 25 species of Mydaeinae reported from Bulgaria. The findings are compared with records of neighbouring countries.

Keywords: Bulgaria, Muscidae, Mydaeinae, new records, comparison

Introduction

The catalogue on the muscid fauna of Bulgaria published by Lavčiev ^[1] in 2003 is based on earlier published reports on Muscidae from Bulgaria and on his own observations. The compilation contains primarily general information about presence of muscidae species in Bulgaria and their flight activities, e.g. seasons of the year and height above sea level. Information such as numbers, sex, localities and dates of collected species is little and no information is given where the specimens are deposited. However, as the overview comprises at least the large majority of all earlier reports on the muscid fauna of the country, it has been chosen as basis to which the results of the present investigation on the distribution records of Mydaeinae-species in Bulgaria are compared.

The subfamily of Mydaeinae with less than 400 species all over the world ^[2] is one of the smaller subfamilies of the Muscidae. It comprises in Europe six genera (*Graphomya* Robineau-Desvoidy, *Gymnodia* Robineau-Desvoidy, *Hebecnema* Schnabl, *Opsolasia* Coquillett, *Mydaea* Robineau-Desvoidy, *Myospila* Rondani) with 38 species reported by Fauna Europaea^[3] and of which Pont ^[3, 4] listed in total 21 and Lavčiev ^[1] 19 species as known from Bulgaria. The present update records 22 species collected in Bulgaria in the period between 1925 and 2015. Of these *Gymnodia humilis* (Zetterstedt, 1860) and *Gymnodia polystigma* (Meigen, 1826) as well as *Mydaea maculiventris* (Zetterstedt, 1846) and *Mydaea setifemur* Ringdahl, 1924 are newly reported for the country. In total the number of Mydaeinae recorded from Bulgaria is raised now to 25 species.

Material and Methods

The present investigations have been conducted from April 2014 to August 2016 and are mainly based on the Muscidae collection of the Institute of Biodiversity and Ecosystem Research, Sofia (IBER) of the Bulgarian Academy of Sciences, Sofia. Additionally the Diptera collections of the National Museum of Natural History, Sofia (NMNHS) of the Bulgarian Academy of Sciences and of the Regional Natural History Museum of Plovdiv (RNHMP) have been screened for specimens of Mydaeinae. External morphological features were examined using a Zeiss Stemi 2000-C stereomicroscope.

The large majority of the Mydaeinae-specimens have been found among the unidentified muscidae material of the collections of the three institutions mentioned above. For examination of the material primarily the keys to the Muscidae of the Palaearctic Region by Hennig ^[5] and additionally the keys to "The Muscidae (Diptera) of Central Europe" by Gregor *et al.* ^[6] were used. The classification of the Muscidae as well as synonymizations applied by Gregor *et al.* ^[7] in the very recently published "Manual of Central European Muscidae (Diptera)" are also applied in this paper.

The examined genera and their species are listed alphabetically and the sites, where the specimens have been collected, chronologically.

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Names of collectors are mentioned as well as of those, who determined specimens in former years. The initials V.L. stand for the late Valentin Lavčiev, who collected the majority of the muscidae specimens of the collection of IBER and who also determined many of them. Information provided by Lavčiev ^[1] on collecting of species is compared with present findings. Comments are also added when pertinent.

All examined specimens have been re-deposited in the entomological collections, from which they have been taken for investigation.

Results

Graphomya maculata (Scopoli, 1763) (= *Graphomya minor* Robineau-Desvoidy, 1830): Material examined: 1♀ Sofia, 17.9.1926, P. Drenski; 1♂ Rila Monastery, 24.8.1929, Szilady, det. Szilady; 1♂ Vitosha Mts., June 1929, Müller; 1♀ Sofia, 10.5.1934, P. Drenski; 1♂ Stara Planina Mts., Troyan Monastery, 1.000 m, 16.8.1940, P. Drenski; 1♀ Stara Planina Mts., Troyan Monastery, 1.000 m, 24.7.1941, P. Drenski; 1♂ Eli dere, 23.8.1958, N. Atanasov; 1♂ Prauzhda, Belogradchik distr., 18.9.1963, V.L.; 1♀ Belogradchik, 29.7.1964, V.L.; 1♀ Parshevitsa, 15.9.1964, V.L.; 1♂ Rodopi Mts., Tchehlevo, 24.8.1965, V.L.; 4♂3♀ Stara Planina Mts., Ribaritsa, 14.8.1969, V.L.; 2♂ Dragalevtsi, Sofia distr., 26.7.1970, V.L.; 1♀ Srebama Reserve (44°06'25"N;27°03'37"E), 11 m, 18.7.2014, T. Ljubomirov; 1♀ Tsibar Island, Reserve Ibisha (44°06'25"N;27°03'37"E), 21.6.-12.7.2014, P. Mitov. NMNHS: 3♀ Sofia, July 1934, P. Drenski. RNHMP: 8♂5♀ Plovdiv, 16.8.1963, Subeva.

Gymnodia eremophila (Brauer & Bergenstamm, 1894): Material examined: 1♀ Primorsko, 2.9.1963, V.L.; 1♀ Diavolsko Blato, Primorsko, 8.10.1965, V.L.; 5♀ Stamopolu, Primorsko, 7.7.1966, V.L.; 2♀ Primorsko, 8.7.1966, V.L.; 4♀ Ropotamo, 9.7.1966, V.L.; 1♀ Rodopi Mts., Pamporovo, 24.6.1966, V.L.

Gymnodia humilis (Zetterstedt, 1860): Material examined: 1♀ Stara Planina Mts., Stakevtsi, 12.8.1966, V.L. NMNHS: 1♂1♀ Rila Mts., Tcham Koria, 17.7.1935, P. Drenski. The markings of thorax and abdomen of the female collected at Tcham Koria are more distinct and ground colour is brighter than the corresponding pattern of the female from Stakevtsi and of another female located at the collection of IBER originating from Great Britain, determined by A.C. Pont. Due to this difference one could be attempted to assign this specimen to *Gymnodia genurufa* (Pandellé, 1899). However, the legs of the female are uniformly dark, lacking reddish-brown knees and basal parts of tibiae as described by Hennig (1964) for *G. genurufa*. The fact that additionally a male of *G. humilis* has been obtained as well at the same day from the collecting site, supported the assumption that the female specimen is *G. humilis*. This is the first record of *G. humilis* from Bulgaria. The species is already known ^[3] from several European countries including two neighbouring countries of Bulgaria, namely Romania and Yugoslavia (still listed as a national entity by Fauna Europaea ^[3]).

Gymnodia polystigma (Meigen, 1826): Material examined: 1♂ Tritroya, 25.6.1969, V.L.; 1♂ Stara Planina Mts., Zheravna, 23.8.1969, V.L.. This species is not widely distributed in Europe. According to Fauna Europaea ^[3] it is known in Europe from Austria, France inclusively Corsica, Italy, Romania and Ukraine. This is the first report of *G. polystigma* from Bulgaria.

Hebecnema fumosa (Meigen, 1826): Material examined: 1♂ Troyanski Balkan, Selenik distr., 16.8.1940, P. Drenski; 1♀ Hila Kom, 11.7.1963, V.L., det. V.L.; 1♂ Izvos, Belogradchik, 21.9.1963, V.L.; 1♀ Stara Planina Mts., Bialata Voda, 21.9.1964, V.L.; 1♀ Barzia, Montana distr., 23.9.1964, V.L.; 1♂ Primorsko, 16.6.1965, V.L.; 1♂ Sofia, 31.5.1966, V.L.; 1♂1♀ Sandanski, Bistritsa river, 13.7.1966, V.L.; 1♂ Rodopi Mts., Yundola, 26.7.1966, V.L.; 1♀ Rodopi Mts., Matan dere, 27.7.1966, V.L.; 1♀ Rodopi Mts., Smolianski Ezera, 31.8.1967, V.L., det. V.L.; 1♂2♀ Novo Panicharevo, Burgas distr., 31.5.1968, V.L.; 1♂ Rodopi Mts., Studenec peak, 24.6.1969, V.L., det. V.L.; 2♂1♀ Rodopi Mts., Trigrad, 25.6.1969, V.L., det. V.L.; 1♀ Dragalevtsi, Sofia distr., 26.7.1970, V.L.; 1♀ Stara Planina Mts., Glozhene, 13.5.1972, V.L.; 1♂ Teteven, Ribaritsa, 22.6.1972, V.L.

Hebecnema nigra (Robineau-Desvoidy, 1830) (= *Hebecnema vespertina* auct. nec (Fallén, 1823)): Material examined: 1♂ Ropotamo, 15.6.1966, V.L.

Hebecnema nigricolor (Fallén, 1825): Material examined: 2♂ Petrochan, 4.8.1964, V.L., det. V.L.; 1♀ Elena Mt., Trapliska River, 800 m, 5.6.1968, V.L. The two males reported from Petrochan are very likely identical with the two specimens as mentioned by Lavčiev ^[1]: "2♂ Western Stara Planina Mts., the passage Petrohan, 3.8.1964, on a room's windows". The different dates are very likely due to transmission error. Additionally Lavčiev reported 4♀ from Eastern Stara Planina Mts., above town Shumen on human and animal excrements. Details on the date of collection are not given. These specimens have not been found among the material examined.

Hebecnema umbratica (Meigen, 1826): Material examined: 1♂3♀ Izvos, Belogradchik, 21.9.1963, V.L.; 4♂7♀ Klisurski Monastery, 25.9.1963, V.L.; 2♀ Izvos, Belogradchik, 29.7.1964, V.L.; 2♀ TKZC Prauzhda, 30.7.1964, V.L.; 2♀ Rakovishki Monastery, 17.9.1964, V.L.; 1♀ Primorsko, 16.6.1965, V.L.; 1♂ Pirin Mts., Begovitsa, 19.9.1965, M. Witanova, det. V.L.; 1♀ Ropotamo, 9.7.1966, V.L.; 1♂ Rodopi Mts., Matan dere, 27.7.1966, V.L.; 1♀ Pirin Mts., Popina Laka, 1.300 m, 29.7.1966, V.L.; 1♂ W. Stara Planina Mts., Sveti Nicola, 14.8.1966, V.L.; 1♀ Rodopi Mts., Beli brezi, 24.6.1969, V.L.; 1♂ Teteven, Ribaritsa, 13.5.1972, V.L.; 2♀ Kazanlak, Krunska korya, 17.5.1972, V.L.; 1♀ Zheravna, oak tree forest, 18.5.1972, V.L.; 1♀ Stara Planina Mts., near to Vezhen peak, 22.6.1972, V.L.; 1♀ Banitsa village, malaise trap (43°20'20"N;23°41'07"E), 1.-15.4.2013, T. Ljubomirov.

Mydaea ancilla (Meigen, 1826): Material examined: 1♀ Sofia, 20.5.1934, P. Drenski, det. V.L.; 1♀ Sofia, 8.6.1934, P. Drenski; 1♂4♀ Stargach Mts., 1.250 m, 15.6.1938, P. Drenski; 1♂ Stargach Mts., 15.6.1938, P. Drenski; 1♀ Klisurski Monastery, 25.9.1963, V.L.; 1♀ Primorsko, 18.6.1965, V.L.; 2♀ Lyulin, 25.6.1965, V.L.; 1♀ Trigrad-Tschairite, 25.7.1965, V.L., det. V.L.; 1♀ Chuprene, Vidin distr., 22.5.1966, V.L., det. V.L.; 1♂2♀ Ropotamo, 9.7.1966, V.L.; 1♀ Stara Planina Mts., Sveti Nikola, 14.8.1966, V.L.; 1♀ Primorsko, 28.8.1966, V.L.; 1♂ near Sliven towards Byala village, Sliven distr., 2.6.1968, V.L.; 2♀ Rila Mts., Cemkovo, 1.800 m, 16.6.1968, V.L.; 1♀ Rodopi Mts., Eleshnitsa, 18.6.1968, V.L.; 1♀ Zheravna village under Razboyna peak, June 1968, V.L.; 1♀ Rodopi Mts., Ivailovgrad, 19.6.1969, V.L.; 1♀ Ribaritsa, Teteven distr., 22.6.1972, V.L., det. V.L.; 1♀ Svoje, Sofia distr. 14.6.1973,

V.L., det. V.L.; 2♀ Bukatsite hut, Shumen distr., 300 m, 29.9.1976, V.L.

Mydaea anicula (Zetterstedt, 1860): Material examined: 1♀ Izvos, Belogradchik distr., 5.7.1963, V.L., det. V.L.; 1♂ Rila Mts., Cemkovo, 1.800 m, 16.6.1968, V.L.; 1♀ Rodopi Mts., Road to peak Persenk (41°51'34"N;24°35'56"E), 1.217 m, 30.8.2015 E. Zielke.

Mydaea corni (Scopoli, 1763) (= *Mydaea scutellaris* Robineau-Desvoidy, 1830): Material examined: 3♀ Stara Planina, m. Lekla, 20.9.1963, V.L.; 1♀ Klisurski Monastery, 25.9.1963, V.L.; 1♀ Vitosha Mts., 25.8.1964, V.L.; 1♀ Stara Planina Mts., Bialata Voda, 21.9.1964, V.L.; 1♀ Ropotamo, 17.6.1965, V.L.; 1♂1♀ Rodopi Mts., Trigrad Tschairite, 25.7.1965, V.L.; 2♀ Rodopi Mts., Kara Bair, 29.7.1965; 1♂5♀ Vitosha Mts., 9.8.1965, V.L.; 1♀ Rodopi Mts., Prezlatcha, 25.8.1965, V.L.; 1♀ Stara Planina Mts., Bialata voda, 16.9.1965, V.L.; 4♀ Stara Planina Mts., Berkovitsa, 25.10.1965, V.L.; 1♀ Pirin Mts., Popina Laka, 1.300 m, 1.11.1965, V.L.; 1♀ Sandanski, 3.11.1965, V.L.; 1♀ Sandanski, 27.7.1966, V.L.; 1♂2♀ Pirin Mts., Popina Laka, 29.7.1966, V.L.; 1♂2♀ W. Stara Planina Mts., Sveti Nikola, 14.8.1966, V.L.; 1♀ Stara Planina Mts., Bialata Voda, 15.8.1966, V.L.; 2♀ Rodopi Mts., Er Kiupria, 30.8.1967, V.L.; 3♀ North East of Rila Monastery, 3.9.1967, M. Witanova; 2♂ Tvardishka Mts., Sheshkingrad, 3.6.1968, V.L.; 1♀ Stara Planina Mts., near peak Tshumerna, 1.000 m, 5.6.1968, V.L.; 1♂1♀ Elena Mts., Trapliska river, 800 m, 5.6.1968 V.L.; 1♂1♀ Elena Mts., Selenik (white cow), 6.6.1968, V.L.; 2♂5♀ Rila Mts., Cemkovo, 1.800 m, 16.6.1968, V.L.; 1♂ Rodopi Mts., hut Studenec, 24.6.1969, V.L.; 3♂1♀ Stara Planina Mts., Vezhen peak, V.L.; 1♂ Rila Mts., Parangalitsa, 22.6.1972, V.L.

Mydaea detrita (Zetterstedt, 1845) (= *Mydaea electa* (Zetterstedt, 1860)): Material examined: 1♀ Stargach, 15.6.1938, P. Drenski, det. V.L.; 1♀ Troyanski Balkan, Selenik distr., 1.000 m, 16.8.1940, P. Drenski; 1♂ W. Stara Planina Mts., Haydushki vodopadi, 9.7.1963, V.L.; 1♀ Zheravna, Sliven distr., 23.8.1963 V.L.; 1♀ W. Stara Planina Mts., m. Lekla, 20.9.1963, V.L.; 1♀ Vrashka Chuka, 17.9.1964, V.L., det. V.L.; 1♀ Teshel, Smolyan Distr., 25.7.1965, V.L.; 1♂ Stoykite, Smolyan distr., 26.7.1965, V.L., det. V.L.; 2♀ Ropotamo, 7.10.1965, V.L., det. V.L.; 1♀ Stara Planina Mts., Bialata voda, 13.8.1966, V.L., det. V.L.; 1♀ Ropotamo, 27.6.1967, V.L., det. V.L.; 1♀ Diavolsko Blato, 30.6.1967, V.L., det. V.L.; 1♀ Rodopi Mts., Eleshnitsa, 18.6.1968, V.L.; 1♀ Stara Planina Mts., Burziya near to Petrochan (43°07'44"N;23°08'29"E), 1.175m, 13.8.2015, E. Zielke.

Mydaea humeralis Robineau-Desvoidy, 1830 (= *Mydaea tincta* Zetterstedt, 1845): Material examined: 1♀ Berkovitsa, 22.9.1963, V.L.; 1♀ Lyulin, 12.8.1965, V.L.; 2♀ near Sliven towards Byala village, 2.6.1968, V.L.; 1♂ Tvardishka Mts., Sheshkingrad, 3.6.1968, V.L.

Mydaea lateritia (Rondani, 1866): Material examined: 3♂3♀ Stargach Mt., 1.250 m, 15.6.1936, P. Drenski, leg. V.L.; 1♂ Ropotamo, 9.7.1966, V.L., det. V.L.; 1♂ Diavolsko Blato, 30.6.1967, V.L., det. V.L. Lavčiev^[1] mentioned the same male of this species from Diavolsko Blato and two males from Ropotamo. The second male from Ropotamo has not been found among the examined material.

Mydaea maculiventris (Zetterstedt, 1846) (= *Mydaea spinipes* Karl, 1929): Material examined: 1♂ W. Stara Planina Mts., Haydushki vodopadi, 9.7.1963, V.L.; 2♀ Elena Mts., Trapliska river, 800 m, 5.6.1968, V.L. This record is new for Bulgaria. According to Fauna Europaea^[3] *M. maculiventris* is only known from Britain Islands, Czech Republic, Germany and Sweden. It seems that there are no other reports of this species worldwide.

Mydaea nebulosa (Stein, 1893): Material examined: 1♀ Tulata near Troyan, 19.10.1939, P. Drenski; 1♂ W. Stara Planina Mts., Haydushki vodopadi, 9.7.1963, V.L., det. V.L.; 1♀ Stara Planina Mts., Vedernik peak, 1.8.1963, V.L.; 2♀ Barzia, Montana distr., 23.9.1964, V.L., det. V.L.; 1♀ Elena Mts., Trapliska river, 800 m, 5.6.1968, V.L.; 1♀ Elena Mts., forest, 6.6.1968, V.L.; 2♀ Zheravna village under Razboyna peak, June 1968, V.L.; 1♂ Zheravna, oak tree forest, 18.5.1972, V.L. Additional records from Lavčiev^[1] are: 1♂ Vitosha Mts., near the hut Sredets, 4.5.1954; 1♀ Western Stara Planina Mts., on the foot of peak Vejen, on excrements of cow, 19.9.1963; 1♂ near the town Berkovitsa, 9.7.1963. The latter one is very likely identical with the listed finding of the same day at Haydushki Vodopadi which is closely situated to Berkovitsa.

Mydaea nubila Stein, 1916: Material examined: RNHMP: 1♀ Asenovgrad, 28.4.1964, Subeva. Lavčiev^[1] recorded 1♀ Western Stara Planina Mts., near village Izvos (Vidin) on pasture, 4.7.1963.

Mydaea orthonevra (Macquart, 1835) (= *Mydaea detrita* auct. (nec Zetterstedt, 1845)): Material examined: 1♀ Rodopi Mts., Tchehlevo, 24.8.1965, V.L.; 1♀ Zheravna, oak tree forest, 18.5.1972, V.L.

Mydaea setifemur Ringdahl, 1924: Material examined: 1♀ Troyanski Balkan, 24.7.1941, P. Drenski. This species is the first report of *M. setifemur* from Bulgaria. It is known^[3] from several European countries including the neighbouring country Romania.

Mydaea urbana (Meigen, 1826): Material examined: 5♀ Sofia, 20.5.1934, P. Drenski, det. V.L.; 1♀ Sofia, 8.6.1934, P. Drenski, det. V.L.; 6♀ Sofia, July 1934, P. Drenski, det. V.L.; 1♀ Sofia, 1.9.1936, P. Drenski; 1♀ Sofia, 27.5.1937, P. Drenski; 1♀ Strandzha Mts., 4.6.1938, leg. not known.; 1♂ Stargach Mts., 15.6.1938, P. Drenski; 2♀ W. Stara Planina Mts., Blatoto, 5.7.1963, V.L., det. V.L.; 3♂7♀ W. Stara Planina Mts., Haydushki vodopadi, 9.7.1963, V.L., det. V.L.; 1♀ W. Stara Planina Mts., Haydushki vodopadi, 19.7.1963, V.L.; 1♀ Rodopi Mts., Ivailovgrad, 3.8.1963, V.L., det. V.L.; 1♀ Rodopi Mts., Perelik hut, 9.8.1963, V.L., det. V.L.; 1♂1♀ Stara Planina Mts., m. Lekla, 20.9.1963, V.L., det. V.L.; 2♀ Ledenika, Vratsa distr., V.L., det. V.L.; 1♀ Rakovishki Monastery, 17.9.1964, V.L., det. V.L.; 2♀ Vrashka Chuka, 17.9.1964, V.L., det. V.L.; 2♀ Arkutino, Burgas distr., 12.6.1965, V.L., det. V.L.; 1♀ Ropotamo, 15.6.1965, V.L.; 6♀ Primorsko, 18.6.1965, V.L., det. V.L.; 2♀ Lyulin, 25.6.1965, V.L.; 2♀ Primorsko, 8.7.1965, V.L., det. V.L.; 1♀ Primorsko, 9.7.1965, V.L., det. V.L.; 2♀ Teshel, Smolyan Distr., 25.7.1965, V.L., det. V.L.; 1♀ Rodopi Mts., Kara Bair, 29.7.1965, V.L., det. V.L.; 3♀ Rodopi Mts., Persenk, 30.7.1965, V.L.; 1♀ Pancharevo, Sofia distr., 1.8.1965, V.L.; 1♀ Vitosha Mts., 9.8.1965, V.L.; 1♂ Lyulin, 12.8.1965, V.L.; 2♀ Rodopi Mts., Tchehlevo, 24.8.1965, V.L.; 1♀ Klisurski

Monastery, 20.5.1966, V.L., det. V.L.; 1♂2♀ Ropotamo, 9.7.1966, V.L., det. V.L.; 1♂1♀ Pirin Mts., Begovitsa, 13.7.1966, V.L.; 2♀ Rodopi Mts., Matan dere, 27.7.1966, V.L., det. V.L.; 1♂8♀ Pirin Mts., Popina Laka, 1.300 m, 29.7.1966, V.L.; 1♀ Bialata Voda, 13.8.1966, V.L., det. V.L.; 1♀ W. Stara Planina Mts., Parshevitsa, 18.8.1966, V.L.; 1♀ Primorsko, 29.8.1966, V.L., det. V.L.; 1♀ Ropotamo, 7.7.1967, V.L., det. V.L.; 1♂2♀ Yakoruda, 13.7.1967, V.L.; 5♀ near Sliven towards Byala village, Sliven distr., 2.6.1968, V.L.; 1♂1♀ Elena Mts., Trapliska river, 800 m, 5.6.1968, V.L.; 2♂1♀ Rila Mts., Cemkovo, 1.800 m, 16.6.1968 V.L., det. V.L.; 2♀ Rodopi Mts., Eleshnitsa, 18.6.1968, V.L.; 1♀ Rodopi Mts., Dabovets, 18.6.1969, V.L., det. V.L.; 1♂3♀ Rodopi, Ivailovgrad, 20.6.1969, V.L.; 2♀ Rodopi, Trigrad, 25.6.1969, V.L., det. V.L.; 1♀ Rodopi, Smolianski Ezera, 31.7.1969, V.L., det. M. Mirtsheva; 6♀ Rodopi Mts., Vishteritsa, 1.580 m, 7.8.1969, V.L.; 1♀ Rodopi Mts., Ivailovgrad, 20.6.1970, V.L.; 1♂ Rodopi Mts., Smolyan, 600-700 m, 23.6.1970, V.L., det. V.L.; 1♂1♀ Stara Planina Mts., Ribaritsa, 11.5.1972, V.L.; 1♀ Troyanski Pass, 1.200 m, 16.5.1972, V.L.; 2♀ Kazanlak, Krunska korya, 17.5.1972, V.L.; 3♀ Kotlenski Mts., State Forestry Zelenich, 18.5.1972, V.L.; 1♂3♀ Zheravna, oak tree forest, 18.5.1972, V.L.; 2♀ Teteven, Ribaritsa, 22.6.1972, V.L.; 3♀ Teteven, Vasilovo, 22.7.1972 V.L.; 8♀ Zheravna village under Razboyna peak, June 1968, V.L. NMNHS: 1♀ Rila Mts., Tcham Korja, 17.8.1935, P. Drenski.

Myospila bimaculata (Macquart, 1834) (= *Myospila hennigi* Gregor & Povolný, 1959): Material examined: 2♂ Petrochan, 7.10.1963, V.L.; 3♀ Vratsa distr., Ledenika, 5.8.1964, V.L.; 1♂ Bistritsa River, Sandanski, 13.7.1966, V.L.; 4♀ Rila Mts., Cemkovo, 1.800 m, 16.6.1968, V.L.; 3♂ Rodopi Mts., hut Beli brezi, 24.6.1969, V.L.; 1♀ Zheravna, oak tree forest, 18.5.1972, V.L.

Myospila mediatunda (Fabricius, 1781): Material examined: 1♂ Sofia, 6.6.1925, P. Drenski; 1♀ Sofia, 15.5.1934, P. Drenski; 2♀ Sofia, 20.5.1934, P. Drenski; 1♂ Sofia, 7.6.1934, P. Drenski; 1♀ Tcham Kurja, 27.7.1934, P. Drenski; 1♂1♀ Stargach Mts., 1.000 m, 15.6.1938, P. Drenski; 1♂ Stargach Mts., Tower Nr. 4, 15.6.1938, P. Drenski; 1♀ Rodopi Mts., Yundola, 11.8.1939, P. Drenski; 2♀ Rodopi Mts., Yundola, 13.8.1939, P. Drenski; 2♀ Pirin Mts., 2.200 m, 15.8.1939, P. Drenski; 7♀ Troyan Distr., Vencite area, 20.6.1940, P. Drenski; 2♀ Central Balkan, Kozia stena, 25.6.1940, P. Drenski; 1♂ Mladezhko, Burgas Distr., 7.5.1963 V.L.; 3♀ Zabardo, Smolyan Distr., 11.5.1963, V.L.; 1♂ Kokalyane, Sofia Distr., 16.6.1963, V.L.; 1♂1♀ Kiten, Burgas Distr., 25.6.1963, V.L.; 1♀ Rezovo, Burgas Distr., 27.6.1963, V.L.; 1♂ West Balkan, Izvos, Vidin Distr., 5.7.1963, V.L.; 1♂ Haydushki Vodopadi, 9.9.1963, V.L.; 4♀ Petrochan, 10.7.1963, V.L.; 1♂1♀ near V. Kom, 11.7.1963, V.L.; 1♂ Teshel, Smolyan Distr., 25.7.1963, V.L.; 1♀ Tserovo, Sofia Distr., 27.7.1963, V.L.; 1♀ Krumovgrad, 4.8.1963, V.L.; 1♀ Zlatograd, 6.8.1963, V.L.; 1♂1♀ Trigrad, 11.8.1963, V.L.; 1♀ Ropotamo, 28.8.1963, V.L.; 1♀ Belogradchik, 17.9.1963, V.L.; 1♂1♀ Izvos, Vidin Distr., 21.9.1963, V.L.; 1♂2♀ Berkovitsa, 22.9.1963, V.L.; 1♂2♀ Petrochan, 24.9.1963, V.L.; 10♂12♀ Klisurski Monastery, 25.9.1963, V.L.; 1♀ Petrochan, 4.7.1964, V.L.; 1♀ TKZC Prauzhda, Vidin Distr., 30.7.1964, V.L.; 4♀ Ledenika, Vratsa Distr., 5.8.1964, V.L.; 1♀ TKZC Prauzhda, Vidin Distr., 9.9.1964, V.L.; 7♀ Rakovishki Monastery, 17.9.1964, V.L.; 2♀ Gramatikovo, Vidin Distr., 18.9.1964, V.L.; 1♀ TKZC Prauzhda, Vidin Distr., 19.9.1964, V.L.; 1♀ Izvos, Vidin Distr., 20.9.1964,

V.L.; 1♂ Izvos, Vidin Distr., 29.9.1964, V.L.; 1♀ Partizani, Varna Distr., 28.5.1965, E. Nestorova; 1♀ Ropotamo, 15.6.1965, V.L.; 2♀ Lyulin, 25.6.1965, V.L.; 1♀ Ropotamo, 7.7.1965, V.L.; 1♀ Primorsko, 9.7.1965, V.L.; 1♂, 1♀ Rodopi Mts., Matan dere, 23.7.1965, V.L.; 1♀ Rodopi Mts., Dospat, 25.7.1965, V.L.; 1♀ Stoykite, Smolyan distr., 26.7.1965, V.L.; 2♀ Rodopi Mts., Persenk, 30.7.1965, V.L.; 1♀ Lyulin, 12.8.1965, V.L.; 10♀ Rodopi Mts., Selishte, 24.8.1965, V.L.; 1♀ Rodopi Mts., Tchehlevo, 24.8.1965, V.L.; 1♀ Rila Monastery to Pastra, 28.10.1965, V.L.; 1♂ Primorsko, 25.4.1966, V.L.; 1♀ Gubesh, 18.5.1966, V.L.; 1♀ W. Balkan, Berkovitsa, 20.5.1966, V.L.; 1♂ Cherepishki monastery, Vratsa distr., 22.5.1966; 1♀ Boyana, 4.6.1966, V.L.; 2♀ Ropotamo, 9.7.1966, V.L.; 3♂16♀ Pirin Mts., Begovitsa, 1.800 m, 13.7.1966, V.L.; 1♂1♀ Bistritsa River, Sandanski, V.L.; 1♀ Pirin Mts., Popina Laka, 13.7.1966, V.L.; 1♂ Rodopi Mts., Yundola, 22.7.1966; V.L.; 4♀ Rodopi, Matan dere, 27.7.1966, V.L.; 2♀ Rodopi Mts., Selishte, 28.7.1966, V.L.; 2♂6♀ Pirin Mts., Popina Laka, 1.300 m, 29.7.1966, V.L.; 1♀ Rodopi Mts., Rozhen, 30.7.1966, V.L.; 4♀ W. Stara Mts., Klisurski Monastery, 15.8.1966, V.L.; 1♀ Diavolsko Blato, Primorsko, 23.8.1966, V.L.; 1♀ Diavolska Reka, Primorsko, 23.8.1966, V.L.; 1♀ Diavolsko Blato, Primorsko, 24.8.1966, V.L.; 1♀ Primorsko, 28.8.1966, V.L.; 1♀ Konoush village (41°51'N;25°56'E), 2.6.1967, V.L.; 1♀ Zhelezino village (41°30'N;25°56'E), 4.6.1967, V.L.; 1♂ Rodopi Mts., Ivailovgrad, 4.6.1967, V.L.; 1♀ Kardzhali state forest, 5.6.1967, V.L.; 1♀ Novo Panicharevo, Burgas distr., 31.5.1968, V.L.; 1♀ near Byala village, Sliven distr., 600 m, 2.6.1968, V.L.; 1♀ Elena Mts. Trapliska river, 800 m, 5.6.1968, V.L.; 3♂3♀ Rila Mts., Cemkovo, 1.800 m, 16.6.1968, V.L.; 1♀ Plovdiv, experimental station, 14.5.1969, V.L.; 2♂1♀ Rodopi Mts., Dabovets, 18.6.1969, V.L.; 3♀ Rodopi Mts., Lyubimets, 18.6.1969, V.L.; 1♀ Rodopi Mts., Mandritsa, 19.6.1969, V.L.; 1♀ Rodopi Mts., Ivailovgrad, 20.6.1969, V.L.; 2♀ Rodopi Mts., Smolianski Ezera, 25.6.1969, V.L.; 1♂3♀ Rodopi Mts., Trigrad, 25.6.1969, V.L.; 1♂ Tritroya, 25.6.1969 V.L.; 1♂4♀ Rodopi Mts., Smolianski Ezera, 31.7.1969, V.L.; 1♀ Stara Planina Mts., Vezhen peak, 1.800 m, 15.8.1969, V.L.; 2♀ Panagyurishte, Banya village 3 km from Kalof, 18.8.1969, V.L.; 1♂ Stara Planina Mts., 3km to Kalof, Panitsite, 18.8.1969, V.L.; 1♂ Rodopi Mts., Mandritsa, 19.6.1970, V.L.; 2♀ Rodopi Mts., Ivailovgrad, 20.6.1970, V.L.; 4♀ Momchilgrad, 22.6.1970, V.L.; 4♂10♀ Rodopi Mts. Krumovgrad, 21.6.1970, V.L.; 1♂ Rodopi Mts., Smolyan, 600-700 m, 23.6.1970, V.L.; 11♀ Rodopi Mts., Teshel, 24.6.1970, leg. V.L.; 1♀ Rodopi Mts., Arda, 25.6.1979, V.L.; 4♂5♀ Dragalevtsi, Sofia distr., 26.7.1970, V.L.; 1♂ Petrich, 21.4.1971, V.L. NMNHS: 1♀ Troyan Balkan, Vencite area, 20.6.1940, P. Drenski.

Additional species of Mydaeinae reported from Bulgaria

The following three species were not detected among the total of 740 Mydaeinae specimens examined, but they have been reported by Lavčiev^[1] and/or by Pont^[3,4].

Gymnodia genurufa (Pandellé, 1899): This species is reported as known from Bulgaria only by Pont^[3,4]. No further information is given.

Hebecnema vespertina (Fallén, 1823): This species is recorded by Lavčiev^[1] from few localities without giving details where and when which numbers and which sex of specimens have been collected. The species is also reported from Bulgaria by Pont^[3,4].

Mydaea deserta (Zetterstedt, 1845): Lavčiev ^[1] reported only one finding of this species: 1♂, Stargach Mt., 1.250 m, 15.6.1938. The species is also recorded for Bulgaria by Pont ^[3, 4].

Discussion

The present investigation revealed 22 species of Mydaeinae collected in Bulgaria. In Table 1 all species are listed which have been recorded from Bulgaria either by Lavčiev ^[1], by Pont ^[3] or which have been identified at the present investigation. In total 25 species are now reported, of which 21 species are mentioned at least in two of these three compilations of the Bulgarian Mydaeinae-fauna. Three species reported by Pont ^[3, 4], *Gymnodia genurufa*, *Hebecnema vespertina* and *Mydaea deserta*, were not found among the screened material, however the latter two species are also recorded by Lavčiev ^[1]. The third species, *G. genurufa*, is in Europe only known from the Mediterranean countries Spain, France and Italy and additionally from Bulgaria ^[3, 4]. Lavčiev expressed some doubts about the report

from Bulgaria when he wrote: "For Bulgaria the species is registered in Catalogue of Palaearctic Diptera, volume 11, 1986, but in the Bulgarian literature no publication have been found about *Brontaea genurufa*."

For comparison the species of Mydaeinae reported for Greece and Romania ^[3] with 11 and 12 species respectively are listed in Table 1 as well. The knowledge on the Mydaeinae-species of the other neighbouring countries of Bulgaria, such as Serbia and Macedonia seems to be poor. From Macedonia *Graphomya maculata* and *Hebecnema fumosa* and from Yugoslavia (still listed as a national entity by Fauna Europaea ^[3]) *Gr. maculata*, *Gy. humilis*, *H. umbratica*, *M. corni*, *M. urbana* and *Myospila alpina* Hendel, 1901 are known ^[3]. Obviously there is no information available on this subfamily of the European part of Turkey yet. In total there is only one species known in the neighbouring countries, namely *Myospila alpina* from Yugoslavia, which is not recorded from Bulgaria.

Table 1: Species of Mydaeinae reported from Bulgaria (BG), Greece (GR) and Romania (RO) either by Lavčiev ^[1] or Pont ^[3] in comparison with the present update (BG 2016).

	BG 2016	BG 2003 (Lavčiev)	BG 2013 (Pont)	GR 2013 (Pont)	RO 2013 (Pont)
<i>Graphomya</i> Robineau-Descoigny					
<i>G. maculata</i> (Scopoli, 1763)	+	+	+	+	+
<i>Gymnodia</i> Robineau-Desvoidy					
<i>G. eremophila</i> (Br. & Berg., 1894)	+	+	+		
<i>G. genurufa</i> (Pandelle, 1899)			+		
<i>G. humilis</i> (Zetterstedt, 1860)	+				+
<i>G. polystigma</i> (Meigen, 1826)	+				+
<i>Hebecnema</i> Schnabl					
<i>H. fumosa</i> (Meigen, 1826)	+	+	+	+	+
<i>H. nigra</i> (Rob.-Desv. 1830)	+	+	+	+	+
<i>H. nigricolor</i> (Fallén, 1825)	+	+	+	+	+
<i>H. umbratica</i> (Meigen, 1826)	+	+	+	+	+
<i>H. vespertina</i> (Fallén, 1823)		+	+	+	+
<i>Mydaea</i> Robineau-Desvoidy					
<i>M. ancilla</i> (Meigen, 1826)	+	+	+	+	
<i>M. anicula</i> (Zetterstedt, 1860)	+		+		
<i>M. corni</i> (Scopoli, 1763)	+	+	+	+	
<i>M. deserta</i> (Zetterstedt, 1845)		+	+		
<i>M. detrita</i> (Zetterstedt, 1845)	+	+	+	+	
<i>M. humeralis</i> Rob.-Desv., 1830	+	+	+		
<i>M. lateritia</i> (Rondani, 1866)	+	+	+	+	
<i>M. maculiventris</i> (Zetterstedt, 1846)	+				
<i>M. nebulosa</i> (Stein, 1893)	+	+	+		+
<i>M. nubila</i> Stein, 1916	+	+	+		
<i>M. orthonevra</i> (Macquart, 1835)	+	+	+		
<i>M. setifemur</i> Ringdahl, 1924	+				+
<i>M. urbana</i> (Meigen, 1826)	+	+	+		+
<i>Myospila</i> Rondani					
<i>M. bimaculata</i> (Macquart, 1834)	+	+	+		
<i>M. mediatubunda</i> (Fabricius, 1781)	+	+	+	+	+
	22	19	21	11	12

Among the examined material *Myospila mediatubunda* was by far the most common species with 257 specimens collected at 92 different dates and 71 different localities, followed by *Mydaea urbana* (141 specimens/ collected at 55 different days/ at 46 different localities). More than 20 specimens were also found of *Mydaea corni* (59 /26 /22), *Graphomya maculata* (39/17/15), *Hebecnema umbratica* (34/17/16), *Mydaea ancilla* (29/19/17) and *Hebecnema fumosa* (22/17/17) respectively. From all other recorded species less specimens were identified. Although numerous captures were conducted in Bulgaria over a period of about 90 years, of some species only very few specimens have been obtained. From

Hebecnema nigra and *Mydaea setifemur* there was even only one specimen each detected among the examined material.

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