ISSN 1211-8788 *Acta Musei Moraviae, Scientiae biologicae*
103(2): 269–280, 2018

Some records of Muscidae (Diptera) from Greece with a description of a new *Phaonia* species and a list of the known muscids from the country

EBERHARD ZIELKE

Institute of Biodiversity and Ecosystem Research, Bulgarian Academy of Sciences, 1 Tsar Osvoboditel Blvd., 1000 Sofia, Bulgaria; e-mail: eo.zielke@abv.bg

ZIELKE E. 2018: Some records of Muscidae (Diptera) from Greece with a description of a new *Phaonia* species and a list of the known muscids from the country *Acta Musei Moraviae, Scientiae biologicae* (Brno) **103(2):** 269–280. – Study of a small collection of incidentally captured Muscidae from Greece revealed 15 species belonging to five genera of four subfamilies. Two species, *Phaonia bitincta* (Schnabl, 1887), and *Helina tetrastigma* (Ringdahl, 1934) are newly recorded for Greece, and *Phaonia parnia* sp. nov. is described as new to science. Based on a literature search and the investigation herein, 149 muscid species are identified as known from Greece. A table is provided, listing the muscid species from the country reported to date.

Key words. Muscidae, Greece, new records, new *Phaonia* species, list of species

Introduction

The family Muscidae is a large and rapidly-growing taxon. Its species are found in a very broad range of terrestrial and aquatic habitats nearly worldwide. When the Catalogue of Diptera was published in 1986, PONT estimated that a total of approximately 3,650 Muscidae species are known. By 2010, the number of Muscidae had increased to 5,210 species (PAPE & THOMPSON 2013). Since then, numerous new muscid species have been described from various countries (e.g. COURI *et al.* 2006; COURI & PONT 2014, 2016; PONT 2012; SOROKINA 2015; XUE & TIAN 2012; XUE & SUN 2015; YU *et al.* 2015; ZIELKE 2017) further supplementing the number of Muscidae species. In spite of such an abundance of described species, the muscid fauna is still only poorly known from many parts of the various zoogeographical regions.

Although Greece has a wide variety of biotopes, only about six new Muscidae species have been described in the past, based on type material collected only in Greece (LYNEBORG 1965) or from localities in Greece and at least in one other country (PONT & GRACH 2008, PONT 2012). An examination of a number of undetermined Muscidae collected recently in central Greece revealed a total of 14 species, of which one *Helina* and one *Phaonia* species are new records for the country. Another one, *Phaonia parnia* sp. nov., is described herein as new to science. In addition, details of the localities, the number and sexes of the specimens collected and a list of Muscidae species from Greece reported to date are presented.

Material and Methods

The muscids studied in the course of the current investigation were collected in July 2017, when Petr Baňař (P.B.) of the Moravian Museum, Brno, Czechia, and Leonidas-Romanos Davranoglou (L.-R.D.) of Oxford University, UK jointly organized collection of Coleoptera, Hemiptera and Hymenoptera in central Greece using yellow pan traps (YPT) and flight interception traps (FIT). Muscidae were found in the northern vicinity of Athens at:

1 Parnitha National Park (38°10′07″N 23°43′43″E; 1.165 m) in FIT and YPT in dense forest;

2 On the way to Parnitha N.P. (38°9′34.818 N23°43′38.528″E; altitude approx. 1,070 m) in YPT in open habitat;

3 In the surroundings of the Tatoi residence (38°9′50.232″N 23°47′32.340″E; altitude approx. 525 m) in YPT in the neighbourhood of abandoned buildings.

A total of 69 incidentally captured Muscidae were trapped and preserved in 80% ethanol.

The identification of the flies is primarily based on the key to the Muscidae of the Palaearctic Region by Hennig (1964) and the keys to the Muscidae of Central Europe published by Gregor at al. (2016). Morphological features of the specimens were examined using a Zeiss Stemi 2000-C stereomicroscope. Standard terminology is used for the descriptions. An AxioCam ERc5s camera took the images and further processing took place in Helicon Focus 6 and Adobe Photoshop CS2. Body length was measured in millimetres (mm).

The classification of the Muscidae and the synonyms follow Gregor *et al.* (2016). Subfamilies, genera and their species are listed alphabetically, and the sites of collection chronologically. Comments are added where pertinent. If not mentioned otherwise, the specimens listed below are deposited in the collection of the Moravian Museum. A few specimens, however, are housed in the collection of the Institute of Biodiversity and Ecosystem Research (IBER), Sofia. They are recorded as "at IBER".

Results

Species of four subfamilies were identified and are listed below.

SUBFAMILY AZELIINAE

***Muscina levida* (Harris, 1780)**

Material examined. 1 ♀ Tatoi, 2.–4.7.2017, P. B.; 1 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.

***Muscina prolapsa* (Harris, 1780)**

Material examined. 1 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.

SUBFAMILY MUSCINAE

Eudasyphora cyanella (Meigen, 1826)

Material examined. 1 ♂ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.

SUBFAMILY PHAONIINAE

Helina abdominalis (Zetterstedt, 1846)

Material examined. 1 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.; 1 ♀ (at IBER) Parnitha N. P., 3.–5.07.2017, YPT, P. B. & L.-R.D.

Helina decipiens Mihályi, 1974

Material examined. 1 ♀ Parnitha N. P., 3.–5.07.2017, YPT, P. B. & L.-R.D.

Helina evecta (Harris, 1780)

Material examined. 9 ♂ 5 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.; 12 ♂ 3 ♀ Parnitha N. P., 3.–5.07.2017, YPT, P. B. & L.-R.D.; 15 ♂ 7 ♀ Tatoi, 15.–18.04.2017, YPT, L.-R.D.

Helina nevadannosa Lyneborg, 1970

Material examined. 2 ♂ (+ 1 ♂ at IBER) Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.

Remarks. *H. nevadannosa* was described by Lyneborg in 1970 only from Granada in Spain and is therefore mentioned in neither the keys provided by Hennig in 1964 nor in the keys to the Muscidae of Central Europe by Gregor *et al.* (2016). Pont (1986) reported the species only from Spain, but Greece is specified as part of its distribution area in Fauna Europaea (Pont 2013). The current Greek finding confirms the presence of *H. nevadannosa* in this Mediterranean country.

Helina reversio (Harris, 1780)

Material examined. 4 ♂ 2 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.; 1 ♀ Parnitha N. P., 3.–5.07.2017, YPT, P.B. & L.-R.D.; 1 ♂ 2 ♀ way to Parnitha, 3.–5.07.2017, YPT, B. P.

Helina sexmaculata (Preyssler, 1791)

Material examined. 1 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P. B. & L.-R.D.

Helina tetrastigma (Meigen, 1826)

Material examined. 7 ♂ Parnitha (+ 3 ♂ at IBER) N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.

Remark. This is a new record for Greece. Together with Croatia, Romania and Bulgaria, Greece now becomes the fourth country in the Baltic Peninsula for which *H. tetrastigma* is reported.

Phaonia bitincta (Rondani, 1866)

Material examined. 2 ♀ (+ 1 ♀ at IBER) Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.

Remarks. Apart from a questionable record from Bulgaria (Zielke 2016a) the species was not previously known from south-eastern Europe. The three females collected at Parnitha are very probably not only the first record of *P. bitincta* from Greece, but they are also the first demonstration that the species inhabits south-eastern Europe.

Phaonia mediterranea Hennig, 1963

Material examined. 1 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.

Phaonia parnia sp. nov.

Material examined. Male holotype (Fig. 1) slightly soiled and with a few missing setae, originating from a locality described on the label as "GR: Parnitha N.P.; 1,165 m, 38°10′07″N23°43′43″E; FIT in dense forest 3.–5.07.2017, leg. P. Banar & R.- L. Davranoglou".

Description of male. *Head*. Ground-colour dark, densely dusted. Eyes covered with hairs longer than the diameter of anterior ocellus, not very densely but distinctly; shortest distance between eyes about equal to width of postpedicel. Width of fronto-orbital plate at shortest distance between eyes approx. as wide as diameter of anterior ocellus; fronto-orbital plates separated for the entire length of frons by frontal vitta, at mid-frons about 1.5 times as wide as diameter of anterior ocellus, but distinctly dilated towards anterior margin. Parafacial at midway slightly broader than half the width of postpedicel. Genal depth below lowest eye margin about twice the width of postpedicel. Upper mouth margin in profile approx. in line with profrons. When viewed from the front, fronto-orbital plates, frontal vitta, parafacials and genae uniformly dusted greyish-white, ocellar tubercle darker and markedly less grey-dusted, when viewed from immediately above, frontal vitta and ocellar triangle predominantly dark with some grey dust, contrasting with grey orbital plates. Antennal segments dark, pedicel with a little grey dust, postpedicel with brownish-grey pollinosity. Postpedicel 2.5 times as long as broad and about twice as long as pedicel. Arista twice as long as length of postpedicel, longest dorsal hairs of arista barely as long as width of postpedicel. Fronto-orbital plate with some ten inclinate frontal setae and interstitial hairs, the uppermost seta close to level of ocellar triangle; at the level of the anterior tip of ocellar triangle, one short, fine hair at most half as long as the adjacent frontal seta. Parafacial bare. Vibrissal setae and surrounding peristomal setae strong, vibrissals slightly longer than the longest peristomal setae. Lower margin of gena with setulose black hairs, upper half of surface of gena bare, postgenal and post-occipital surfaces covered with dark, setulose hairs. Proboscis short, stout and dark; length of labella approx. equal to width of proboscis; palpus long, slender and dark.

Thorax including pleura dark, uniformly and densely grey-dusted. When viewed from the rear, scutum with two dark paramedian longitudinal stripes, each one between the row of dorsocentral setae and the area of acrostichal hairs, starting at the level between first and second presutural dorsocentral setae and reaching the level between

third and fourth postsutural dorsocentrals, scarcely interrupted by transverse suture. Outside the row of presutural dorsocentrals, a dark patch-like stripe between dorsocentrals and presutural setae starting about at the level of posthumeral seta and not reaching the transverse suture; postsuturally between dorsocentral and intra-alar setae a short, dark stripe extending from approx. level of first to third postsutural seta. All dark stripes slightly greyish-dusted. Midway along posterior margin of scutum and basis of scutellum, an oval brownish patch not interrupted by the scutellar suture. Remaining part of scutellum uniformly and densely greyish-dusted. Anterior and posterior spiracles whitish. Scutum covered with setulose hairs; dorsocentral setae 2 + 4; acrostichals 2+3–4, presutural and the prescutellar setae long and strong, anterior postsutural acrostichals shorter; two postpronotal setae, the outer seta somewhat longer than the inner one; anterior notopleural seta distinctly longer than posterior seta, no additional hairs on notopleuron; pre-alar seta as long as anterior notopleural seta; two intra-alar setae. Prosternum, proepimeral area, meron, anepimeron and katepimeron bare. Katepisternum covered with setulose hairs, about as long as ground hair and with 1+2 katepisternal setae, the lower seta much closer to the posterior upper one than to the anterior seta. Anepisternum with setulose hairs and at posterior margin with three strong setae in the upper third and one strong seta at the lower margin, distinctly shorter interstitial setulose hairs between the setae. Scutellum with long apical and lateral setae, preapical seta at most half as long as apical seta and basal seta not longer than one third the length of the apical seta; upper surface haired, ventral and lateral surfaces bare.

Wing membrane with brownish shimmer, especially along the veins and cross-veins with brown clouding. Tegula and basicosta brownish, veins brown to dark. Costal spine not conspicuous, barely three times as long as neighbouring bristles. Radial node and basis of R4+5 bare. Vein M1 straight, diverging from vein R4+5. Cross-vein r-m basal from the point where vein R1 enters costa, distal cross-vein dm-cu somewhat oblique and sinuous. Calypters whitish, lower calypter about 1.5 times as long as upper calypter. Haltere yellow.

Legs dark, coxae and femora grey-dusted, tibiae and tarsomeres uniformly dark brown. Pulvilli and claws around equally long, barely reaching the length of the fifth tarsomere. Hind coxa bare on posterior surface. Fore-femur with complete rows of posteroventral, posterodorsal and posterior setae, the latter shorter than depth of femur and barely distinguishable from the setulose hairs on the posterior surface of femur; posterodorsal and posteroventral setae about as long as, or longer than, depth of femur. Fore-tibia without median posterior seta. Mid-femur without long setae, in basal half with a row of posteroventral setae, slightly stronger than the ground hair and about one third as long as depth of femur, pre-apically one small anterior seta and three stronger posterodorsal-to-posterior setae. Mid-tibia with two posterior setae at least as long as diameter of tibia and with a third shorter seta at distal third. Hind femur with complete row of strong anterodorsal setae and a less complete row of anteroventral setae, the longest anteroventrals at distal part, basal setae distinctly shorter; posteroventral surface of basal two-thirds with few setae, shorter than the corresponding anteroventrals, at apical third with a row of strong setae, pre-apically two strong posterior or posterodorsal setae. Hind tibia with two anterodorsal setae somewhat longer than diameter of tibia, one

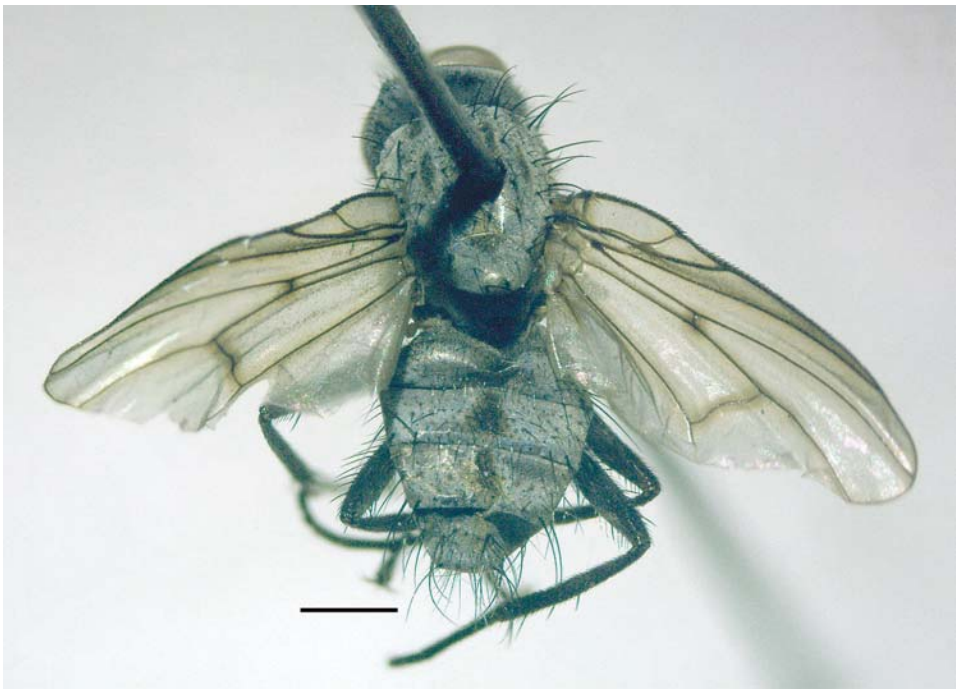

Fig. 1. *Phaonia parnia* sp. nov: male holotype, dorsal view (bar = 1mm).

or two anteroventral setae smaller than the anterodorsal setae, and one posterodorsal seta at the apical third.

Abdomen uniformly grey-dusted. All tergites with dark median longitudinal markings not reaching the posterior margin of the corresponding tergite; patterns on syntergite to tergite 4 in the form of trapeziform patches, with the broadest one on tergite 3, tergite 5 marked by only a faintly dark narrow stripe. The pattern does not vary when the angle of light changes, nor are there any other flexible dark patches. Rows of marginal and discal setae, or at least their scars, are present on tergites 3 to 5, with conspicuously long marginals on tergites 4 and 5 and additionally long discal setae on tergite 5. Sternites uniformly dark and greyish-dusted, sternite 1 bare.

Male genitalia. Hypopygium not particularly pronounced. Posterior lobes of sternite 5 rounded, dark and pollinose. The species is clearly distinguished by morphological characters from other species of the genus. The identification does not depend on comparison of the characters of the male terminalia. Therefore, to avoid damage to the only available specimen of this new species, extraction of the genitalia was not undertaken.

Measurements. Length of body approx. 6 mm; length of wing approx. 5.5 mm.

Female not known.

Etymology. The name of the species "*parnia*" is an adjective in the female gender and has been modified from Parnitha, the locality in which the specimen was collected.

Diagnosis. The taxonomic characters of *P. parnia* lead in the keys to *Phaonia* males of the Palaearctic Region (Hennig 1964) and of central Europe (Gregor *et al.* 2016), respectively, to *Phaonia laeta* (Fallén,1823) or *Phaonia pratensis* (Robineau-Desvoidy, 1830). *P. parnia* is distinguished from both these species by its brownish-tinged wing membranes and a consistent dark median pattern, without shifting patches on the grey abdomen. Additionally, it differs from *P. laeta* in arista hairs shorter than the width of postpedicel, a bare meron and from some points of view by a dark frons, greyish-dusted, but still in distinct contrast to the densely grey-dusted orbital plates. From *P. pratensis* it is distinguished by a predominantly greyish frontal vitta as broad as the width of the postpedicel, by lacking a posterior seta on the fore-tibia and by dark brown rather than yellowish translucent tibiae, less densely haired eyes, lobes of sternite not pointed and lustrous but rounded and grey pollinose.

Phaonia trimaculata (Bouché, 1834)

Material examined. 5 ♂ 3 ♀ (+ 3 ♂ 2 ♀ at IBER) Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.; 1 ♀ way to Parnitha, 3.–5.07.2017, YPT, B. P.

Phaonia valida (Harris, 1780)

Material examined. 2 ♀ (+ 1 ♀ at IBER) Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.

SUBFAMILY COENOSIINAE

Coenosia testacea (Robineau-Desvoidy, 1830)

Material examined. 1 ♂ 5 ♀ Parnitha N. P., 3.–5.07.2017, FIT in dense forest, P.B. & L.-R.D.; 1 ♀ Parnitha N. P., 3.–5.07.2017, YPT, P.B. & L.-R.D.

Discussion

According to Fauna Europaea (Pont 2013) *Helina tetrastigma* is known in south-eastern Europe only from Croatia, Romania and Bulgaria. Greece is now the fourth and most southern country of the Balkan Peninsula from which the species has been reported. *Phaonia bitincta*, the other species newly recorded for Greece, is virtually unknown from the Balkans. Lavčiev (2003) listed the species in the Catalogue of Muscidae from Bulgaria, but the reporting appears based on misidentification of *Phaonia rufiventris* specimens (Zielke 2016a). If the record of *P. bitincta* from Bulgaria in Fauna Europaea is based only on Lavčiev's doubtful listing, then the current report from Greece would also be the first record of *P. bitincta* from the south-eastern European region.

Fauna Europaea indicates that 575 Muscidae species are known from the European area of the Palaearctic Region. However, at least 19 species and one genus reported from Europe in the last twenty years have not yet been considered by the website. The actual

number of muscid species recorded currently from Europe amounts, therefore, to at least to 594 species.

The first report concerning Muscidae collected in Greece was published by Lyneborg in 1965 and additional information on the presence of Muscidae in the country was provided by the Catalogue of Muscidae of the Palaearctic Region (Pont 1986), in which about 104 muscid species are mentioned as known for the country. A search for further reports of the Greek muscid fauna in the literature disclosed only a few additional papers on the Muscidae of the country (e.g. Pont & Grach 2008, Pont 2012, Pont & Standfuss 2016), indicating that the local muscid population is only scantly explored. Information concerning the occurrence of muscid species in Greece may also be obtained from the website of Fauna Europaea (Pont 2013). Comparing the numbers of known muscid species from some southern European countries, Ivkovic & Pont (2015) mentioned that 138 Muscidae species are reported from the Greek mainland. For the current investigation, 144 species were counted as recorded from Greece and the Greek islands at the website of Europaea, version 1.3 (Pont 2013). Two other species from Greece, reported recently in literature, have not yet been considered by Fauna Europaea. These are *Phaonia richardi*, a new species described from Morocco, Spain and Greece by Pont (2012), and *Hydrotaea okazakii* (Shinonaga & Kano, 1971), a species usually known from Japan and China, recorded from Greece and Spain by Pont & Standfuss (2016). The Muscidae species from Greece, retrieved from the various sources, amount to a total of 149 species belonging to 32 genera and five subfamilies. Apart from an early report by Lyneborg (1965) and some listings of Phaoniinae- and Mydaeinae-species (Zielke 2016a, 2016b, 2018), no compilation of Muscidae species from Greece could be traced in literature. Therefore the muscid species from Greece, either recently collected or found in literature, are collated in Table. 1.

Acknowledgements

I am very grateful to Petr Baňař, Curator at the Entomological Department of the Moravian Museum, Brno (Czech Republic) for his kind support of my work on Muscidae during my times at the Moravian Museum, Brno, Czech Republic and for making the muscid material generously available to me. I would also like to offer my thanks to Toshko Ljubomirov, responsible for the zoological collection of the Institute of Biodiversity and Ecosystem Research, Bulgaria Academy of Sciences, for supporting my research on Muscidae by giving generous access to the Diptera collection and for providing all facilities needed for the examination of the material. I am also grateful to Tony Long (Svinošice) for working up the English.

Tab. 1. Muscidae species recorded from Greece. (No. = running number; Ref. = references of records of species from Greece; 1 = Lyneborg 1965; 2 = Pont 1986; 3 = Pont 2013; 4 = Pont 2012; 5 = Pont & Grach 2008; 6 = Pont & Standfuss 2016; 7 = current investigation.) (Continued.) →

No	Subfamily / Species	Ref.
	Subfamily Azeliinae	
1	*Azelia nebulosa* Rob.- Desv., 1830	3
2	*Drymeia vicana* (Harris, 1780)	2;3
3	*Hydrotaea armipes* (Fallen, 1825)	3
4	*Hydrotaea borussica* Stein, 1899	1;2;3
5	*Hydrotaea capensis* (Wied., 1818)	2;3
6	*Hydrotaea cinerea* Rob.- Desv., 1830	2;3
7	*Hydrotaea cyrtoneurina* (Zett., 1845)	1;2;3
8	*Hydrotaea dentipes* (Fabricius, 1805)	2;3
9	*Hydrotaea floccosa* Macquart, 1835	2;3
10	*Hydrotaea hennigi* Pont, 1985	3
11	*Hydrotaea hirticeps* (Fallen, 1824)	2;3
12	*Hydrotaea ignava* (Harris, 1780)	1;2;3
13	*Hydrotaea irritans* (Fallen, 1823)	2;3
14	*Hydrotaea meteorica* (Linnaeus, 1758)	2;3
15	*Hydrotaea okazakii* (Shin. & Kano,1971)	6
16	*Hydrotaea penicillata* (Rondani, 1866)	1;2;3
17	*Hydrotaea tuberculata* Rondani, 1866	3
18	*Hydrotaea velutina* Rob.- Desv., 1830	3
19	*Muscina levida* (Harris, 1780)	1;2;3;7
20	*Muscina pascuorum* (Meigen, 1826)	2;3
21	*Muscina prolapsa* (Harris, 1780)	2;3:5;7
22	*Muscina stabulans* (Fallen, 1817)	2;3
23	*Thricops semicinereus* (Wied., 1817)	2;3
24	*Thricops simplex* (Wied., 1817)	1;2;3
	Subfamily Muscinae	
25	*Dasyphora albofasciata* (Macq., 1839)	1;2;3
26	*Dasyphora pratorum* (Meigen, 1826)	1;2;3
27	*Eudasyphora cyanella* (Meigen, 1826)	2;3;7
28	*Haematobia irritans* (Linnaeus, 1758)	2;3
29	*Haematobia titillans* (Bezzi, 1907)	2;3
30	*Haematobosca atripalpis* (Bezzi, 1895)	1;2;3
31	*Haematobosca stimulans* (Meigen,1824)	2;3
32	*Mesembrina meridiana* (Linnaeus, 1758)	3
33	*Morellia simplex* (Loew, 1857)	1;2;3
34	*Musca autumnalis* De Geer, 1776	2;3
35	*Musca crassirostris* Stein, 1903	2;3
36	*Musca domestica* Linnaeus, 1758	1;2;3
37	*Musca larvipara* Porchinsky, 1910	2;3
38	*Musca osiris* Wiedem., 1830	1;2;3
39	*Musca tempestiva* Fallén, 1817	2;3
40	*Neomyia cornicina* (Fabricius, 1781)	1;2;3
41	*Neomyia viridescens* (Rob.- Desv., 1830)	3
42	*Polietes lardarius* (Fabricius, 1781)	2;3
43	*Polietes meridionalis* Peris & Llor., 1963	2;3
44	*Pyrellia rapax* (Harris, 1780)	2;3
45	*Pyrellia vivida* Rob.- Desv., 1830	1;2;3
46	*Stomoxys calcitrans* (Linnaeus, 1758)	1;2;3
	Subfamily Phaoniinae	
47	*Atherigona pulla* (Wiedemann, 1830)	3
48	*Atherigona soccata* Rondani, 1871	3

No	Subfamily / Species	Ref.
49	*Atherigona theodori* Hennig, 1963	3
50	*Atherigona varia* (Meigen, 1824)	1;2;3
51	*Helina abdominalis* (Zetterstedt, 1846)	1;2;3;7
52	*Helina beloloba* Lyneborg, 1965	1;2;3
53	*Helina chaetopyga* (Malloch, 1921)	3
54	*Helina clara* (Meigen, 1826)	3
55	*Helina czernyi* Lyneborg, 1970	3
56	*Helina decipiens* Mihalyi, 1974	3;7
57	*Helina evecta* (Harris, 1780)	1;2;3;7
58	*Helina lasiophthalma* (Macquart, 1835)	1;2;3
59	*Helina moedlingensis* (Schnabl, 1911)	2;3
60	*Helina nevadannosa* Lyneborg, 1970	3;7
61	*Helina parcepilosa* (Stein, 1907)	2;3
62	*Helina pertusa* (Meigen, 1826)	3
63	*Helina protuberans* (Zetterstedt, 1845)	3
64	*Helina pubescens* (Stein, 1893)	2;3
65	*Helina quadrum* (Fabricius, 1805)	2;3
66	*Helina reversio* (Harris, 1780)	1;2;3;7
67	*Helina richardi* Pont, 2012	4
68	*Helina sexmaculata* (Preyssler, 1791)	2;3;6
69	*Helina straminea* Hennig, 1963	1;2;3
70	*Helina tetrastigma* (Meigen,1826)	7
71	*Helina vicina vicina* (Czerny, 1900)	1;2;3
72	*Phaonia amicula* Villeneuve, 1922	3
73	*Phaonia bitincta* (Rondani, 1866)	7
74	*Phaonia cincta* (Zetterstedt, 1846)	3
75	*Phaonia exoleta* (Meigen, 1826)	2;3
76	*Phaonia fuscata* Fallen, 1825	2;3
77	*Phaonia hellenia* Lyneborg, 1970	1;2;3
78	*Phaonia laeta* (Fallen, 1823)	3
79	*Phaonia mediterranea* Hennig, 1963	1;2;3;7
80	*Phaonia pallida* (Fabricius, 1787)	1;2;3
81	*Phaonia palpata* (Stein, 1897)	2;3
82	*Phaonia parnia* sp. nov	7
83	*Phaonia perdita* (Meigen, 1830)	3
84	*Phoania pratensis* (Rob.- Desv., 1830)	3
85	*Phaonia regalis* (Stein, 1900)	2;3
86	*Phaonia rufipalpis* (Macquart, 1835)	2;3
87	*Phaonia scutellata* (Zetterstedt, 1845)	1;2;3
88	*Phaonia serva* (Meigen, 1826)	3
89	*Phaonia siebecki* Schnabl, 1911	3
90	*Phaonia subventa* (Harris, 1780)	1;2;3
91	*Phaonia tiefii* (Schnabl, 1888)	3
92	*Phaonia trimaculata* (Bouché, 1834)	2;3;7
93	*Phaonia tuguriorum* (Scopoli, 1763)	2;3
94	*Phaonia valida* (Harris, 1780)	1;2;3;7
	Subfamily Mydaeinae	
95	*Graphomya maculata* (Scopoli, 1763)	2;3
96	*Hebecnema fumosa* (Meigen, 1826)	2;3
97	*Hebecnema nigra* (Rob.- Desv., 1830)	2;3
98	*Hebecnema nigricolor* (Fallen, 1825)	3
99	*Hebecnema umbratica* (Meigen, 1826)	3

No	Subfamily / Species	Ref.
100	*Hebecnema vespertina* (Fallen, 1823)	1;2;3
101	*Mydaea ancilla* (Meigen, 1826)	3
102	*Mydaea corni* (Scopoli, 1763)	3
103	*Mydaea electa* (Zetterstedt, 1860)	1;2;3
104	*Mydaea lateritia* (Rondani, 1866)	1;2;3
105	*Myospila meditabunda* (Fabr., 1781)	2;3
	Subfamily Coenosiinae	
106	*Coenosia agromyzina* (Fallen, 1825)	1;2;3
107	*Coenosia atra* Meigen, 1830	1;2;3
108	*Coenosia attenuata* Stein, 1903	2;3
109	*Coenosia freidbergi* Pont & Grach, 2008	5
110	*Coenosia genualis* Rondani, 1866	2;3
111	*Coenosia humilis* Meigen, 1826	1;2;3
112	*Coenosia nigridigita* Rondani, 1866	3
113	*Coenosia octosignata* Rondani, 1866	2;3
114	*Coenosia praetexta* Pandelle, 1899	3
115	*Coenosia ruficornis* Macquart, 1835	3
116	*Coenosia testacea* (Rob.- Desv., 1830)	1;2;3;7
117	*Coenosia tigrina* (Fabricius, 1775)	1;2;3
118	*Coenosia villipes* Rondani, 1866	2;3
119	*Limnophora bipunctata* (Stein, 1908)	2;3
120	*Limnophora maculosa* (Meigen, 1826)	2;3
121	*Limnophora obsignata* (Rondani, 1866)	1;2;3
122	*Limnophora olympiae* Lyneborg, 1965	1;2;3
123	*Limnophora pandellei* Seguy, 1923	2;3
124	*Limnophora pulchriceps* (Loew, 1860)	3
125	*Limnophora setinerva* Schnabl, 1911	1;2;3
126	*Limnophora tigrina* (Am Stein, 1860)	3
127	*Limnophora triangula (Fallen, 1825)*	1;2;3
128	*Lispe apicalis* Mik, 1869	2;3
129	*Lispe caesia* Meigen, 1826	2;3
130	*Lispe candicans* Kowarz, 1892	2;3
131	*Lispe consanguinea* Loew, 1858	2;3
132	*Lispe leucospila* (Wiedemann, 1830)	3
133	*Lispe loewi* Ringdahl, 1922	2;3
134	*Lispe longicollis* Meigen, 1826	2;3
135	*Lispe nana* Macquart, 1835	2;3
136	*Lispe pectinipes* Becker, 1903	2;3
137	*Lispe pygmaea* Fallen, 1825	1;2;3
138	*Lispe scalaris* Loew, 1847	2;3
139	*Lispe tentaculata* (De Geer, 1776)	1;2;3
140	*Lispocephala alma* (Meigen, 1877)	2;3
141	*Lispocephala brachialis* (Rondani, 1826)	1;2;3
142	*Lispocephala erythrocera* (Rob.- Desv.,1830)	3
143	*Lispocephala mikii* (Strobl, 1893)	2;3
144	*Lispocephala ungulata* (Rondani, 1866)	2;3
145	*Macrorchis meditata* (Fallen, 1825)	3
146	*Orchisia costata* (Meigen, 1826)	2;3
147	*Schoenomyza litorella* (Fallén, 1823)	1;2;3
148	*Spanochaeta dorsalis* (v. Roser, 1840)	2;3
149	*Spilogona dispar* (Fallén, 1823)	1;2;3

References

Couri M. & Pont A. 2014: New species of Afrotropical Muscidae (Diptera: Muscoidea). *Zootaxa* **3852(3):** 301–320.

Couri M. & Pont A. 2016: New African species of *Helina* Robineau-Desvoidy (Diptera, Muscidae). *Zootaxa* **4103(4):** 373–382.

Couri M., Pont A. C. & Penny N. D. 2006: Muscidae (Diptera) from Madagascar: Identification keys, descriptions of new species, and new records. *Proceedings of the Californian Academy of Sciences* **57:** 799–923.

Gregor F., Rozkošný R., Barták M. & Vaňhara J. 2016: Manual of Central European Muscidae (Diptera). *Zoologica* **162:** 1–220.

Hennig W. 1964: *Muscidae*. In: Lindner E. (ed.): *Die Fliegen der palaearktischen Region*. E. Schweizerbart'sche Verlagsbuchhandlung, Stuttgart, 63 b, 1110 pp.

Ivkovic M. & Pont A. C. 2015: New records of Muscidae (Diptera) from Mediterranean countries. *ZooKeys* **496:** 131–144.

Lavčiev V. 2003: Diptera: Fanniidae, Muscidae, Stomoxydidae. *Catalogus Faunae Bulgaricae*. Pensoft, Sofia, 5, 77 pp.

Lyneborg L. 1965: Muscidae (Diptera) from Greece, collected by E. Janssens and R. Tollet, with descriptions of four new species. *Bulletin Institut royal des Sciences naturelles de Belgique* **41(23):** 1–14.

Lyneborg L. 1970: Some Muscidae from Southern Spain, with descriptions of six new species (Insecta, Diptera). *Steenstrupia* **1:** 29–54.

Pape T. & Thompson F. C. (eds.) 2013: Systema Dipterorum*:* Family Tables of Systema Dipterorum version 1.0 from 2010 in version 1.5, last updated 13. June 2013. http://www.diptera.org/, accessed on 08.01.2018

Pont A. C. 1986: *Family Muscidae*. In: Soós A. & Papp L. (eds.): *Catalogue of Palaearctic Diptera.* **11:** 57–215, Akadémiai Kiadó, Budapest.

Pont A. C. 2012: Distribution records of *Helina* Robineau-Desvoidy, 1830 (Diptera: Muscidae) from the Caucasus Mountains, with the descriptions of three new species. *Zootaxa* **3409:** 30–46.

Pont A. C. 2012: *Helina richardi* (Diptera: Muscidae), a remarkable new species from the Mediterranean subregion. *The Canadian Entomologist* **144:** 348–352.

Pont A. C. 2013: *Fauna Europaea: Muscidae.* In*:* Pape T. & Beuk P. *Fauna Europaea*: *Diptera Brachycera*. Fauna Europaea, version 2.6.2. http//www.faunaeur.org., accessed on 08.05.2018

Pont A. C. & Grach C. 2008: A new species of *Coenosia* Meigen from the Mediterranean coasts of Israel and Greece (Diptera: Muscidae). *Israel Journal of Entomology* **38:** 115–124.

Pont A. C. & Standfuss K. 2016: *Hydrotaea okazakii* (Shinonoga & Kano) an East Asian species newly found in the Mediterranean subregion (Diptera: Muscidae). *Studia dipterologica* **23(1):** 123–124.

Sorokina V. S. 2015: New species of the genus *Phaonia* R.-D., 1830 (Diptera, Muscidae) from Central Asia. *Zootaxa* **4013:** 571–587.

Xue W. & Sun H. 2015: Diagnosis and key for the *Helina annosa*-group (Diptera: Muscidae) from China, with descriptions of nine new species. *Journal of Natural History* **49(25–26):** 1549–1583.

Xue W. Q. & Tian X. 2012: Thirteen new species of the genus Helina R.-D. (Diptera: Muscidae) from China. *Journal of Natural History* **46(9–10):** 565–598.

Yu T. & Xue W. Q. 2015. A key to *Spilogona* Schnabl (Diptera: Muscidae) from China, with descriptions of 13 new species. *Annales de la Société entomologique de France (N.S.): International Journal of Entomology* 1–35. doi:10.1080/00379271.2015.1063252

Zielke E. 2016a: Update of distribution records of *Phaonia* Robineau-Desvoidy (Diptera: Muscidae) from Bulgaria with the description of a new species. *Journal of Entomology and Zoology Studies* **4(4):** 626–632.

Zielke E. 2016b: Update of distribution records of Mydaeinae (Diptera: Muscidae) from Bulgaria. *Journal of Entomology and Zoology Studies* **4(6):** 310–315.

Zielke E. 2017: Four new species of the subfamily Phaoniinae (Diptera: Muscidae) from Bulgaria. *Journal of Entomology and Zoology Studies* **5(6):** 901–908.

Zielke E. 2018: An update of distribution records of *Helina* R.-D. and other genera of the subfamily of Phaoniinae (Diptera: Muscidae) from Bulgaria. *Acta Musei Moraviae, Scientiae biologicae* **103(2):** 249–267.