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Species Composition and Zoogeographical Aspects of the Horsefly Fauna (Diptera: Tabanidae) in the Central Balkan Mountains

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Abstract: The study was carried out at 11 localities on the territory of the Central Balkan Mountains, Bulgaria, during the active seasons of tabanids in 2010-2011. Totally, 2,437 tabanid specimens were collected and processed. Totally, 28 species of 9 genera were identified: *Chrysops* (3 species), *Atylotus* (1), *Therioplectes* (1), *Hybomitra* (3), *Tabanus* (13), *Heptatoma* (1), *Haematopota* (4), *Dasyrhamphis* (1) and *Philipomyia* (1). Seventeen species are reported for the first time for the Central Balkan Mountains. New and published data suggest the occurrence of 39 tabanid species in the Central Balkan Mountains. The horsefly fauna of the studied region is predominated by elements of the Boreal-Eurasian faunal type (60.71% of the species).

Keywords: Tabanids, fauna, structure of horse flies assemblages, zoogeographical aspects, Central Balkan Mountains, Bulgaria

Introduction

The Balkan Mountains (Stara Planina) is the longest Bulgarian mountain range. The available data concerning the tabanid fauna of this mountain are rather fragmentary. Ganeva (2005) summarised the known data for the tabanid fauna of the Balkan Mountains published by Nedyalkov (1912), Drensky (1929), Moucha, Chvála (1961) and Trifonov *et al.* (1964); these were 28 species of 10 genera reported from various parts of the Stara Planina Mountains. According to Chvála (1988), four of the species: *Atylotus quadrifarius* (Loew, 1874), *Hybomitra tropica* (Linnaeus, 1758), *Dasyrhamphis nigritus* (Fabricius, 1794) and *Tabanus rectus* Loew, 1858, are not a component of the Bulgarian tabanid fauna. After investigation in the Tvarditsa Mountain (part of the Central Balkan Mountains), Ganeva (2005) reported 17 tabanid species of 4 genera collected from 7 localities.

The insufficient and contradictory data about horsefly fauna in the Central Balkan Mountains is the main reason prompting us to carry out a systematic study in this mountainous region. The aim of this paper is to summarise both literature and new data on the horse flies in the Central Balkan Mountains and to present data about composition and zoogeographical aspects of the horse flies assemblages.

Material and Methods

Study area

The Balkan Mountains (Stara planina) are a climatic borderline between north and south Bulgaria. It has three parts: Western, Central and Eastern Balkan Mountains, the longest being the Central part (Nikolov, Yordanova 2002). The study on the species composition of the tabanid fauna was carried out on the territory of the Central Balkan Mountains.

According to the biogeographical units as described by Gruev, Kuzmanov (1994), the middle- and high-mountain belts of the Balkan Mountains belong to the Mountain Biogeographical Region (the Balkan Mountains Subregion), while the low-

mountain belt is within the respective lowlands contiguous to the Balkan Mountains.

The tabanid collections were done in basic biotopes situated on the southern side of the Central Balkan Mountains, part of the following biogeographical regions: the Mountain Biogeographical Region, the subregion of the Balkan Mountains, which includes one site (the Panitsite site), and the Middle Bulgarian Biogeographical Region, the Subregion of the Hilly Lowlands of the Tundzha River, which includes two sites (villages of Enina and Gorno Izvorovo, respectively No 4 and No 5) (Fig. 1). The other sites are located in the Balkan Mountain Subregion, on the southern side (the monastery of the town of Kalofer and the location of the Malaise trap, No 1 and No 2) and on the northern side (the series of route collection localities, No 6.1-6.6 on the map) (Fig. 1).

The systematic study of the composition of horsefly fauna in the Central Balkan Mountains was conducted during two successive active tabanid seasons, from May to September in 2010 and 2011 at the following biotopes:

The Panitsite site (No 3 on the map) (749 m a.s.l.) is situated at 6 km north from the town of Kalofer. The tabanids were collected in a biotope situated to the south of a nearby livestock breeding farm. The chosen biotope is a meadow surrounded in the west and east by a deciduous forest. The Byala Reka River flows in a ravine at a distance of about 100 m from the meadow.

The village of Enina (No 4 on the map**)** is situated at 4 km northeast of the town of Kazanlak, at the foot of the Stara Planina Mountains. The biotope is situated 2 km northeast of the village of Enina, at 537 m a.s.l. About 50 m south of this biotope, next to the road from Kazanlak to Gorno Izvorovo, there is a fountain used for watering livestock raised in the region. The vegetation consists of grass, bushes and deciduous trees.

The village of Gorno Izvorovo (No 5 on the map**)** is situated 12 km northeast of the town of Kazanlak. The field observations were conducted on a pasture located 1.5 km south from the village, at 643 m a.s.l. North of the pasture, there is an untilled land covered with grassy vegetation, while to the west the pasture borders on a coniferous forest. Near the studied biotope there is a micro dam (at a distance of 500 m).

Sampling and processing of specimens

Horse flies were collected during 2010 and 2011 at 11 localities on the territory of the Central Balkan Mountains (Fig. 1). They were sampled from 10 localities by sweep net on horses or a car and by hand inside a car. The daily trapping period was between 8 a.m. and 8 p.m. in the basic biotopes (No 3, 4 and 5 on the map of the studied area). Sampling by Malaise traps was made at one locality only (No 2 on the map of the studied area). The processing of the insects was carried out in the laboratory. The collected specimens were identified according to the keys of Chvala *et al*. (1972) and Olsufjev (1977).

A list of the studied localities and a list of the identified tabanid species are presented. The list of the localities indicates the altitude, the geographic coordinates, the collection dates and the total number of collected specimens from each locality. Altitude and geographical coordinates were obtained through measurement with a Garmin GPS Navigator Etrex VistaHCx**.**

The localities (new or based on published data) as well as the number, gender of the captured specimens and the dates of the catches were indicated for each species. The sequence of species was done according to the Catalogue of Palaearctic Diptera (Chvála 1988).

Analysis of the structure of the tabanid assemblages

The criteria adopted for analysing the dominance structure were those based on the relative abundance (RA) used by Skufin (1949): dominant species (RA ≥ 8 %), subdominant species (2% ≤ RA ≤ 8%), scarce species (0.5 % ≤ RA ≤ 2 %) and rare species (RA≤ 0.5 %).

List of localities

Monastery, town of Kalofer, 633 m a.s.l., 42°654 N, 24°958 E: 14.05.2010, 1 ♀.

Malaise trap, 535 m a.s.l., 42°642 N, 24°951 E: 2-12.06.2010, 2♀; 12-21.06.2010, 4♀; 21.06.-1.07.2010, 4♀; 1.07.-10.07.2010, 5♀; 10.07.-20 .07.2010, 6♀; 10.08.-20.08.2010, 2♀; 20.08.-1 .09.2010, 2♀.

Panitsite Site, 749 m a.s.l., 42°661 N, 24°981 E: 13.06.2010, 83♀; 11.07.2010, 55♀; 31.07.2010, 7♀; 7.08.2010, 50♀; 28.08.2010, 3♀; 9.07.2011, 223♀ ; 7.08.2011, 11♀.

Enina village, 537 m a.s.l., 42°395 N, 25°261 E: 16.05.2010, 7♀; 29.05.2010, 3♀, 3♂; 16.06.2010, 15♀; 27.06.2010, 45♀, 1♂; 17.07.2010, 84♀, 7♂; 1.08.2010, 100♀, 3♂; 14.08.2010, 21♀, 8 ♂; 29.08.2010, 3♀; 22.05.2011, 10♀; 22.06.2011, 195♀, 5♂; 1.07.2011, 1♀ ; 16.07.2011, 28♀, 15♂; 17.07.2011, 87♀, 13♂ ; 28.08.2011, 54♀, 5♂; 11.09.2011, 10♀.

Gorno Izvorovo village, 643 m a.s.l., 42°390 N, 25°283 E: 16.05.2010, 42♀; 29.05.2010, 25♀; 17.06.2010, 12♀; 3.07.2010, 115♀; 18.07.2010, 91♀, 4♂; 2.08.2010, 13♀; 15.08.2010, 87♀, 1♂; 21.05.2011, 98♀; 23.06.2011, 262♀, 1♂; 16.07.2011, 233♀; 14.08.2011, 94♀, 3♂; 11.09.2011, 7♀.

Route collection – localities:

By the river, before the fork in the road to the village of Radino, 42°829 N, 25°455 E: 16.07.2011, 12♀, 1♂.

Town of Plachkovtsi, Minkino district, 42°808 N, 25°510 E: 16.07.2011, 10♀; 17.07.2011, 114♀, 1♂.

After the fork in the road to the village of Radevtsi, in the direction of the Krastets chalet, 42°803 N, 25°498 E: 16.07.2011, 2♀.

Predela Site, between the towns of Gabrovo and Tryavna, 42°858 N, 25°423 E: 17.07.2011, 10♀.

After the village of Zhaltesh, in the direction of Gabrovo, 42°858 N, 25°367 E: 17.07.2011, 6 ♀.

In the region of Mount Buzludzha, 42°740 N, 25°376 E: 17.07.2011, 12♀.

Results and Discussion

Species composition

Totally, 2,437 specimens of tabanids were collected and identified during the study. Out of them, 2,355 female and 71 male specimens were identified to the species level, while 11 specimens were identified to the generic level only. Twenty-eight species of tabanids were recorded, belonging to nine genera: *Chrysops* (3 species), *Atylotus* (1 species), *Therioplectes* (1 species), *Hybomitra* (3 species), *Tabanus* (13 species), *Heptatoma* (1 species), *Haematopota* (4 species), *Dasyrhamphis* (1 species) and *Philipomyia* (1 species) (Table 1).

The following 17 species were reported for the first time from the territory of the Central Balkan Mountains: *Chrysops caecutiens* (Linnaeus, 1758), *C. ludens* Loew, 1858, *C. viduatus* (Fabricius, 1794), *Therioplectes gigas* (Herbst, 1787), *Hybomitra bimaculata* (Macquart, 1826), *H. ciureai* (Séguy, 1937), *Tabanus autumnalis* Linnaeus, 1761, *T. bovinus* Linnaeus, 1758, *T. miki* Brauer,1880, *T. regularis* Jaennicke, 1866, *T. rupium* (Brauer, 1880), *T. unifasciatus* Loew, 1858, *Heptatoma pellucens* (Fabricius, 1776), *Haematopota grandis* Meigen, 1820, *H. longeantennata* (Olsufjev, 1937), *Dasyrhamphis ater* (Rossi, 1790) and *Philipomyia graeca* (Fabricius, 1794). A total of 27 species was recorded for the first time in the studied localities. This study shows two new localities of *Hybomitra bimaculata* in the Central Balkan Mountains. This species was first reported as new to the Bulgarian fauna by Ganeva (2008) during the study of the tabanid fauna from the Eastern Balkan Mountains.

On analysing the literary data (Nedyalkov 1912, Drensky 1929, Moucha, Chvála 1961, Ganeva 2005), the present study reports 17 tabanid species for the first time and confirms the presence of 11 tabanid species in the fauna of the Central Balkan Mountains. Five species (*Nemorius vitripennis*, *Atylotus fulvus*, *A. rusticus*, *Tabanus bifarius* and *T. spodopterus*), reported by Nedyalkov (1912) and Drensky (1929) in the Troyan Mountain and Shipka Mountain, as well as six (*Tabanus exclusus*, *T. prometheus*, *T. shannonellus*, *T. smirnovi*, *Haematopota pandazisi* and *H. scutellata*) of 17 species, reported by Ganeva (2005) from the Tvarditsa Mountain, were not found in the studied territories. Thus, to date, according to the literary and original data, a total of 39 species of tabanids have been recorded for the territory of the Central Balkan Mountains.

Dominance structure

Of the registered nine genera, the greatest species variety is that of the genus *Tabanus* (13 species) (Table 1). The material collected from the 13 species of the genus *Tabanus* amount to 81.06% of all identified specimens in this study. By the criterion of relative abundance of species (RA), two *Tabanus* species are dominant (*T. tergestinus*, 56.73 % and *T. bromius*, 12.71 %), two are sub-dominant (*T. quatuornotatus*, 2.40 %, and *T. maculicornis*, 4.04 %), three are scarce species (*T. glaucopis*, 1.81%; *T. unifasciatus*, 1.11%; and *T. sudeticus*, 1.07%) and six are rare species (*T. regularis*, 0.41%; *T. unifasciatus*, 0.29%; *T. cordiger*, 0.29%; *T. rupium*, 0.12%; *T. bovinus*, 0.04%; and *T. miki*, 0.04%) (Table 1).

The genus *Haematopota* (four species) is in the second place with regard to the species diversity. The populations of the four species belonging to this genus provide 11.30% of the tabanid collection in this region. They fall under three categories with respect to RA: the dominant species (*H. pluvialis*, 8.87%), the subdominant (*H. grandis*, 2.19%) and rare species (*H. italica*, 0.16%; *H. longeantennata,* 0.08%) (Table 1).

The genera *Chrysops* and *Hybomitra* are represented by three species each. According to data on their relative abundance, each of the two genera is represented by one scarce species (*C. caecutiens*, 0.70%, and *H. ciureai*, 0.54%) and by two rare species (*C. viduatus*, 0.12%; *C. ludens*, 0.08%; *H. distinguenda*, 0.33%; and *H. bimaculata*, 0.08 %). The material collected from each of these genera rep-

resents respectively 0.90% (*Chrysops*) and 0.95% (*Hybomitra*) of the total numbers of the tabanid specimens collected in this study (Table 1).

The other five genera of the tabanid complex (*Atylotus*, *Therioplectes*, *Heptatoma Dasyrhamphis* and *Philipomyia*) are represented by one species each (Table 1). The registered species of the genera *Therioplectes*, *Heptatoma* and *Dasyrhamphis,* are rare (0.04%), while those of the genera *Atylotus* and *Philipomyia* are subdominant (4.59%) and scarce (1.08%), respectively (Table 1).

The common species (three dominant and four subdominant) in the tabanid assemblages of the Central Balkan Mountains amount to 91.53% of the total numbers of horse flies in the region, while the group of the scarce ones (six species) and the rare ones (15 species) make up 8.47% (Table 1). The analysis of the RA of the registered species indicates that only *Tabanus tergestinus* keeps its dominant status in the tabanid assemblages of the three main collection localities and in the assemblages of the Central Balkan Mountains. For the other common species, there are variations in the dominant structure of the tabanid assemblages both between localities and within one locality between 2010 and 2011. The highest concentration of rare species was found in the biotope at the village of Gorno Izvorovo (11 species), while the lowest, in the pastures of the Panitsite place (two species) (Table 1).

Zoogeographical aspects of the Central Balkan Mountain tabanid fauna

According to the zoogeographical division of the tabanid fauna described by Olsufjev (1977, 1980), the species identified for the territory of the Central Balkan Mountains belong to the five fauna complexes from two subregional types of fauna: Boreal-Eurasian type with three fauna complexes (Euro-Siberian forest, Forest-Steppe and Taiga fauna complex) and Mediterranean type of fauna with two fauna complexes (South-European and Pontic-Hyrcanian).

On the territory of the Central Balkan Mountains, the Euro-Siberian forest complex is represented by 13 species (*Chrysops caecutiens, C. viduatus, Hybomitra distinguenda, Tabanus bovinus, T. cordiger, T. glaucopis, T. maculicornis, T. miki, T. rupium, T. sudeticus, Heptatoma pellucens, Haematopota italica* and *H. pluvialis*).

The Forest-Steppe fauna complex is represented by three species (*Hybomitra ciureai, Tabanus autumnalis* and *Tabanus bromius*), whereas the taiga fauna complex is represented by one species (*Hybomitra bimaculata*) (Olsufjev 1977, 1980).

The 17 species from the Boreal-Eurasian type of fauna represent 60.71% of the tabanid fauna composition on the territory of the Central Balkan Mountains.

The Mediterranean subregional tabanid fauna is represented on the studied territory by 10 South-European species (*Chrysops ludens, Atylotus loewianus*, *Therioplectes gigas, Tabanus quatuornotatus*, *T.regularis, T. tergestinus*, *T. unifasciatus, Haematopota grandis, Dasyrhamphis ater* and *Philipomyia graeca*) and one Pontic-Hyrcanian species (*Haematopota longeantennata*). Thus, the Mediterranean fauna represents 39.29% of the tabanid fauna on the territory of the Central Balkan Mountains.

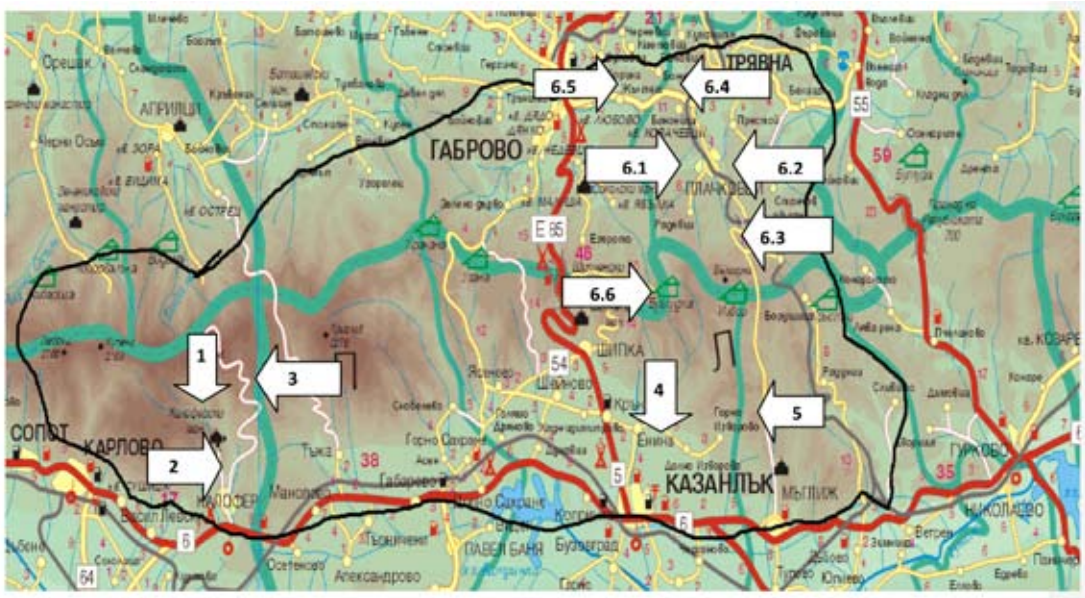

Fig. 1. Map of the studied area. Studied sites are described in Materials and Methods section

Table 1. Species composition and number of captured specimens of tabanids (Diptera: Tabanidae) on the territory of the Central Balkan Mountains (2010-2011); (after the sign "+" the number of captured male specimens is given; the dominant species are in bold)

Species	Panitsite, Kalofer	Enina village	Gorno Izvorovo village	Other localities	Total specimens	% of total specimens
Chrysops caecutiens	-	-	1	16	17	0.70
C. ludens	-	-	-	2	2	0.08
C.viduatus	-	2	1	-	3	0.12
Atylotus loewianus	42	14+2	50	3	109+2	4.59
Therioplectes gigas	-	-	1	–	1	0.04
Hybomitra bimaculata	-	-	-	2	2	0.08
H. ciureai	-	3	9	1	13	0.54
H. distinguenda	2	-	6	-	8	0.33
Tabanus autumnalis	1	1+3	2	–	4+3	0.29
T. bovinus	-	-	1	-	1	0.04
T. bromius	22	87+12	174+6	7	290+18	12.71
T. cordiger	-	4	3	-	7	0.29
T. glaucopis	11	2	3	28	44	1.81
T. maculicornis	13	8	3	74	98	4.04
T. miki	-	-	1	-	1	0.04
T. quatuornotatus	1	10+4	42	1	54+4	2.40
T. regularis	-	2+5	2+1	-	4+6	0.41
T. rupium	-	2	1	-	3	0.12
T. sudeticus	2	10	9	5	26	1.07
T. tergestinus	320	431+20	568+1	35+1	1354+22	56.73
T. unifasciatus	1	8+6	11+1	-	20+7	1.11
Heptatoma pellucens	-	-	-	1	1	0.04
Haematopota grandis	-	43+5	4	1	48+5	2.19
H. italica	-	-	3	1	4	0.16
H. longeantennata	-	-	2	-	2	0.08
H. pluvialis	7	27+3	178	-	212+3	8.87
Dasyrhamphis ater	-	1	-	-	1	0.04
Philipomyia graeca	5	5	1	15+1	26	1.08
Total number of specimens	427	660+60	1076+9	192+2	2355+71	100.00

Based on the comments above, it can be concluded that the tabanid fauna of the Central Balkan Mountains is predominated by the elements of the Boreal-Eurasian subregional fauna (60.71% of the registered species).

Conclusions

The present study shows that, on the basis of original and literature data, the tabanid fauna of the Central Balkan Mountains is represented by 39 species. The dominant species are *T. tergestinus* (56.73%), *T. bromius* (12.71%) and *H. pluvialis* (8.87%). The tabanid fauna of the Central Balkan Mountains is predominated by species of the Boreal-Eurasian subregional fauna (60.71%).

List of species

Family Tabanidae
Subfamily Chrysopsinae
Genus *Nemorius* Rondani, 1856
***Nemorius vitripennis* (Meigen, 1820)**

Literature data: Troyansky Balkan (Drensky 1929)

Genus *Chrysops* Meigen, 1803

***Chrysops* (*Chrysops*) *caecutiens* (Linnaeus, 1758)**

New records: Gorno Izvorovo, 3.07.2010,

1♀; **Radino,** 16.07.2011, 4♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 1♀; 17.07.2011, 11♀.

***Chrysops* (*Chrysops*) *ludens* Loew, 1858**

New records: Plachkovtsi, Minkino district, 17.07.2011, 1♀; **Predela** (between Gabrovo and Tryavna)**,** 17.07.2011, 1♀.

***Chrysops* (*Chrysops*) *viduatus* (Fabricius, 1794)**

New records: Enina, 29.05.2010, 1♀; 22.06.2011, 1♀; **Gorno Izvorovo**, 23.06.2011, 1♀.

Subfamily Tabaninae

Genus *Atylotus* Osten-Sacken, 1876

***Atylotus fulvus* (Meigen, 1804)**

Literature data: Troyan (Drensky 1929)

***Atylotus loewianus* (Villeneuve, 1920)**

New records: Panitsite, 7.08.2010, 33♀; 28.08.2010, 2♀; 7.08.2011, 7♀; **Enina**, 1.08.2010, 3♀; 14.08.2010, 6♀, 2♂; 28.08.2011, 5♀; **Gorno Izvorovo**, 15.08.2010, 40♀; 16.07.2011, 1♀; 14.08.2011, 9♀; **Plachkovtsi,** Minkino district, 17.07.2011, 2♀; **Predela** (between Tryavna and Gabrovo)**,** 17.07.2011, 1♀.

Literature data: Bozhevtsi, 12.08.04, 2♀**;** Sini Bryag reserve, 12.08.04, 39 ♀; Gradsko, 13.08.04, 11♀ (Ganeva 2005).

***Atylotus rusticus* (Linnaeus, 1767)**

Literature data: Troyan (Nedyalkov 1912).

Genus *Therioplectes* Zeller, 1842

***Therioplectes gigas* (Herbst, 1787)**

New records: Gorno Izvorovo, 23.06.2011, 1♀.

Genus *Hybomitra* Enderlein, 1922

***Hybomitra bimaculata* (Macquart, 1826)**

New records: Plachkovtsi, Minkino district, 17.07.2011, 1♀; **Buzludzha peak,** 17.07.2011, 1♀.

***Hybomitra ciureai* (Séguy, 1937)**

New records: Enina, 27.06.2010, 1♀; 22.06.2011, 2♀; **Gorno Izvorovo**, 18.07.2010, 1♀; 21.05.2011, 1♀; 23.06.2011, 6♀; 16.07.2011, 1♀; **Plachkovtsi,** Minkino district**,** 17.07.2011, 1♀.

***Hybomitra distinguenda* (Verrall, 1909)**

New records: Panitsite, 13.06.2010, 2♀; **Gorno Izvorovo**, 18.07.2010, 2♀; 23.06.2011, 4♀.

Literature data: Sini Bryag reserve, 12.08.04, 1♀ (Ganeva 2005).

Genus *Tabanus* Linnaeus, 1758

***Tabanus autumnalis* Linnaeus, 1761**

New records: Panitsite 13.06.2010, 1♀; **Enina**, 16.05.2010, 1♀; 1.08.2010, 1♂; 22.06.2011, 1♂; 17.07.2011, 1♂; **Gorno Izvorovo**, 17.06.2010, 1♀; 16.07.2011, 1♀.

***Tabanus bifarius* Loew, 1858**

Literature data: According to Drensky (1929), in the horsefly collection of Nedyalkov (1912), there was a specimen from the Balkan Mountains identified as *Tabanus bifarius,* with its locality not exactly specified (Svoge or Troyan). This gives us reason for including *Tabanus bifarius* in the tabanid fauna of the Central Balkan Mountains.

***Tabanus bovinus* Linnaeus, 1758**

New records: Gorno Izvorovo, 15.08.2010, 1♀.

***Tabanus bromius* Linnaeus, 1758**

New records: Malaise trap, Kalofer, 12-21.06.2010, 1♀; **Panitsite,** 13.06.2010, 1♀; 11.07.2010, 4♀; 31.07.2010, 2♀; 7.08.2010, 5♀; 9.07.2011, 9♀; 7.08.2011, 1♀; **Enina**, 16.06.2010, 2♀; 27.06.2010, 2♀; 17.07.2010, 13♀, 4♂; 1.08.2010, 8♀, 2♂; 14.08.2010, 9♀, 4♂; 29.08.2010, 2♀; 22.06.2011, 15♀; 16.07.2011, 6♀, 2♂; 17.07.2010, 18♀; 28.08.2011, 12♀; **Gorno Izvorovo,** 3.07.2010, 6♀; 18.07.2010, 24♀, 2♂; 2.08.2010, 4♀; 15.08.2010, 25♀, 1♂; 23.06.2011, 30♀; 16.07.2011, 34♀; 14.08.2011, 51♀, 3♂; **Radino,** 16.07.2011, 1♀; **Plachkovtsi,** Minkino district**,** 17.07.2011, 4♀; **Predela** (between Tryavna and Gabrovo)**,** 17.07.2011, 1♀.

Literature data: Sini Bryag reserve, 12.08.04, 2♀; Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Tabanus cordiger* Meigen, 1820**

New records: Enina, 16.05.2010, 1♀; 1.08.2010, 1♀; 28.08.2011, 2♀; **Gorno Izvorovo,** 18.07.2010, 2♀; 21.05.2011, 1♀.

Literature data: Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Tabanus exclusus* Pandellé, 1883**

Literature data: Bozhevtsi, 12.08.04, 2♀; Gradsko, 13.08.04, 13♀; Novachevo, 13.08.04, 37♀ (Ganeva 2005).

***Tabanus glaucopis* Meigen, 1820**

New records: Malaise trap, Kalofer, 1-10.07.2010, 3♀; 10-20.07.2010, 5♀; 10-20.08.2010, 2♀; 20.08-1.09.2010, 2♀; **Panitsite**, 31.07.2010, 1♀; 7.08.2010, 7♀; 28.08.2010, 1♀; 9.07.2011, 1♀; 7.08.2011, 1♀; **Enina**, 17.07.2010, 1♀; 17.07.2011, 1♀; **Gorno Izvorovo,** 23.06.2011, 1♀; 14.08.2011, 1♀; 11.09.2011, 1♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 2♀; 17.07.2011, 11♀; **in the direction of the chalet Krastets,** 16.07.2011, 1♀; **Buzludzha peak,** 17.07.2011, 2♀.

Literature data: Kozarevo**,** 21.09.02**,** 2♀; Bozhevtsi, 12.08.04, 19♀; Sini Bryag reserve, 12.08.04, 23♀; Novachevo, 13.08.04, 30♀; Gradsko, 13.08.04, 13♀ (Ganeva 2005).

***Tabanus maculicornis* Zetterstedt, 1842**

New records: Malaise trap, Kalofer, 1-10.07.2010, 1♀; **Panitsite**, 13.06.2010, 3♀; 11.07.2010, 2♀; 7.08.2010, 1♀; 9.07.2011, 7♀;

Enina, 16.06.2010, 1♀; 17.07.2010, 1♀; 22.06.2011, 5♀; 17.07.2011, 1♀; **Gorno Izvorovo** 17.06.2010, 1♀; 3.07.2010, 2♀; **Radino,** 16.07.2011, 4♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 4♀; 17.07.2011, 53 ♀; **in the direction of the chalet Krastets,** 16.07.2011, 1♀; **Predela** (between Tryavna and Gabrovo), 17.07.2011, 5♀; **Zhaltesh village,** 17.07.2011, 5♀; **Buzludzha peak,** 17.07.2011, 1♀.

Literature data: Sini Bryag reserve, 12.08.04, 1♀ (Ganeva 2005).

***Tabanus miki* Brauer, 1880**

New records: Gorno Izvorovo, 2.08.2010, 1♀.

***Tabanus prometheus* Szilady, 1923**

Literature data: Novachevo, 13.08.04, 1♀ **(**Ganeva 2005)

***Tabanus quatuornotatus* Meigen, 1820**

New records: Monastery, Kalofer, 14.05.2010, 1♀; **Panitsite**, 13.06.2010, 1♀; **Enina**, 16.05.2010, 3♀; 29.05.2010, 2♀, 3♂; 16.06.2010, 1♀; 27.06.2010, 1♀, 1♂; 22.05.2011, 1♀; 22.06.2011, 2♀; **Gorno Izvorovo,** 16.05.2010, 9♀; 29.05.2010, 5♀; 21.05.2011, 26♀; 23.06.2011, 2♀.

Literature data: Kalofer, 26.05.1960, 1♂ **(**Moucha, Chvala, 1961); Borov Dol, 25.05.02, 4♀; Tvurdishki passage, 25.05.02, 7♀ (Ganeva 2005).

***Tabanus regularis* Jaennicke, 1866**

New records: Enina, 14.08.2010, 1♂; 16.07.2011, 1♂; 17.07.2011, 2♀, 3♂; **Gorno Izvorovo,** 18.07.2010, 1♂; 16.07.2011, 1♀; 14.08.2011, 1♀.

***Tabanus rupium* (Brauer, 1880)**

New records: Enina, 27.06.2010, 1♀; 17.07.2011, 1♀; **Gorno Izvorovo,** 3.07.2010, 1♀.

***Tabanus shannonellus* Kröber, 1936**

Literature data: Novachevo, 13.08.04, 8♀ (Ganeva 2005).

***Tabanus smirnovi* Olsufjev, 1962**

Literature data: Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Tabanus spodopterus* Meigen, 1820**

Literature data: Stoletov peak (Drensky 1929).

***Tabanus sudeticus* Zeller, 1842**

New records: Panitsite, 9.07.2011, 2♀; **Enina**, 27.06.2010, 1♀; 1.08.2010, 2♀; 14.08.2010, 1♀; 22.06.2011, 6♀; **Gorno Izvorovo,** 18.07.2010, 1♀; 23.06.2011, 3♀; 16.07.2011, 4♀; 14.08.2011, 1♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 1♀; 17.07.2011, 2♀; **Predela** (between Tryavna and Gabrovo), 17.07.2011, 1♀; **Zhaltesh village,** 17.07.2011, 1♀.

Literature data: Sini Bryag reserve, 12.08.04, 1♀; Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Tabanus tergestinus* Egger, 1859**

New records: Malaise trap, Kalofer, 2-12.06.2010, 1♀; 12-21.06.2010, 3♀; 21.06-1 .07.2010, 4♀; 1-10.07.2010, 1♀; 10-20.07.2010, 1♀; **Panitsite**, 13.06.2010, 66♀; 11.07.2010, 48♀; 31.07.2010, 4♀; 7.08.2010, 3♀; 9.07.2011, 198♀; 7.08.2011, 1♀; **Enina**, 16.06.2010, 9♀; 27.06.2010, 34♀; 17.07.2010, 66♀, 3♂; 1.08.2010, 85♀; 14.08.2010, 4♀; 22.06.2011, 153♀; 16.07.2011, 19♀, 12♂; 17.07.2011, 59♀, 5♂; 28.08.2011, 2♀; **Gorno Izvorovo,** 17.06.2010, 9♀; 3.07.2010, 77♀; 18.07.2010, 61♀, 1♂; 2.08.2010, 7♀; 15.08.2010, 13♀; 23.06.2011, 207♀; 16.07.2011, 176♀; 14.08.2011, 18♀; **Radino** 16.07.2011, 3♀, 1♂; **Plachkovtsi,** Minkino district**,** 17.07.2011, 16♀; **Buzludzha peak,** 17.07.2011, 6♀.

Literature data: above Shipka village (Nedyalkov 1912); Novachevo, 13.08.04, 1♀; Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Tabanus unifasciatus* Loew, 1858**

New records: Panitsite, 7.08.2011, 1♀; **Enina**, 17.07.2010, 2♀; 1.08.2010, 1♀; 14.08.2010, 1♂; 22.06.2011, 4♀, 4♂; 17.07.2011, 1♀, 1♂; **Gorno Izvorovo,** 18.07.2010, 2♀; 2.08.2010, 1♀; 15.08.2010, 2♀; 23.06.2011, 1♀, 1♂; 16.07.2011, 1♀; 14.08.2011, 4♀.

Genus *Heptatoma* Meigen, 1803

***Heptatoma pellucens* (Fabricius, 1776)**

New records: Plachkovtsi, Minkino district, 17.07.2011, 1♀.

Genus *Haematopota* Meigen, 1803

***Haematopota grandis* Meigen, 1820**

New records: Enina, 29.08.2010, 1♀; 28.08.2011, 32♀, 5♂; 11.09.2011, 10♀; **Gorno Izvorovo,** 11.09.2011, 4♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 1♀.

***Haematopota italica* Meigen, 1804**

New records: Gorno Izvorovo, 16.05.2010, 1♀; 29.05.2010, 1♀; 21.05.2011, 1♀; **Plachkovtsi,** Minkino district, 17.07.2011, 1♀.

Literature data: Gradsko, 13.08.04, 1♀ (Ganeva 2005).

***Haematopota longeantennata* (Olsufjev, 1937)**

New records: Gorno Izvorovo, 11.09.2011, 2♀.

***Haematopota pandazisi* (Kröber, 1936)**

Literature data: Sini Bryag reserve, 12.08.04, 8♀; Novachevo, 13.08.04, 10♀ (Ganeva 2005).

***Haematopota pluvialis* (Linnaeus, 1758)**

New records: Panitsite, 13.06.2010, , 5♀; 9.07.2011, 2♀; **Enina**, 16.05.2010, 2♀; 27.06.2010, 2♀; 14.08.2010, 1♀; 22.05.2011, 9♀; 22.06.2011, 6♀; 1.07.2011, 1♀; 16.07.2011, 3♀; 17.07.2011, 2♀,

3♂; 28.08.2011, 1♀; **Gorno Izvorovo,** 16.05.2010, 32♀; 29.05.2010, 19♀; 17.06.2010, 1♀; 18.07.2010, 25♀; 15.08.2010, 5♀; 21.05.2011, 69♀; 23.06.2011, 6♀; 16.07.2011, 13♀; 14.08.2011, 8♀.

Literature data: Sini Bryag reserve, 12.08.04, 1♀ (Ganeva 2005).

***Haematopota scutellata* (Olsufjev, Moucha & Chvála, 1964)**

Literature data: Sini Bryag reserve, 12.08.04, 8♀ (Ganeva 2005).

Genus *Dasyrhamphis* Enderlein, 1922

***Dasyrhamphis ater* (Rossi, 1790)**

New records: Enina, 22.06.2011, 1♀.

Genus *Philipomyia* Olsufjev, 1964

***Philipomyia graeca* (Fabricius, 1794)**

New records: Malaise trap, Kalofer, 2-12.06.2010, 1♀; **Panitsite,** 13.06.2010, 1♀; 9.07.2011, 4♀; **Enina**, 16.06.2010, 2♀; 27.06.2010, 3♀; **Gorno Izvorovo,** 16.07.2011, 1♀; **Plachkovtsi,** Minkino district**,** 16.07.2011, 1♀; 17.07.2011, 10♀, 1♂; **Predela** (between Tryavna and Gabrovo), 17.07.2011, 1♀; **Buzludzha peak,** 17.07.2011, 2♀.

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