

Horse Flies (Diptera: Tabanidae) in the Rila Mts., Bulgaria

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Abstract: The study was carried out at 47 localities on the territory of the Rila Mts., Bulgaria, during the active seasons of tabanids in 2010-2015. Totally, 1401 tabanid specimens were collected and processed. Totally, 34 species of 8 genera were identified: *Silvius* (1), *Chrysops* (3), *Atylotus* (2), *Hybomitra* (7), *Tabanus* (15), *Haematopota* (3), *Dasyrhamphus* (1) and *Philipomyia* (2). Three species, *Hybomitra caucasica* (ENDERLEIN, 1925), *H. muehlfeldi* (BRAUER, 1880) and *H. solstitialis* (MEIGEN, 1820), are reported for the first time for the tabanid fauna of Bulgaria. *Nemorius vitripennis* (MEIGEN, 1820), *Hybomitra aterrima* (MEIGEN, 1820), *Hybomitra montana* (MEIGEN, 1820), *Haematopota grandis* MEIGEN, 1820 and *H. italica* MEIGEN, 1804, known for the Rila Mts. tabanid fauna from literature sources, are not registered in this study. Thus, based on the summary of the literature data and the results of this study, 39 species in tabanid fauna have been recorded of the Rila Mts. The horsefly fauna of the studied region is predominated by species of the Boreal-Eurasian fauna (61.54%).

Key words: tabanids, species composition, zoogeographical notes, Rila Mts., Bulgaria

Introduction

The tabanid fauna of the Rila Mts. has not been studied well enough, in spite of the fact that first results have been published c. 120 years ago. YOAKIMOV (1899) reported the presence of tabanids in this region at the end of 19th century; he recorded *Tabanus bovinus* L., 1758, *Tabanus micans* MEIGEN, 1804 and *Haematopota phuvialis* (L., 1758).

Later, NEDYALKOV (1912) marked the localities of 7 tabanid species in the Rila Mts. DRENSKY (1929) reported 13 species, most of them registered mainly in the Borovets region. *Atylotus fulvus* (MEIGEN, 1804), *Hybomitra auripila* (MEIGEN, 1820), *Tabanus tergestinus* EGGER, 1859 and *Tabanus spodopterus* MEIGEN, 1820 were reported for the Rila Mts. by both authors.

MOUCHA & CHVÁLA (1961), OLSUFJEV *et al.* (1967) and CHVÁLA *et al.* (1972) published data about the distribution of *T. spodopterus* and *Philipomyia aprica* (MEIGEN, 1820) whose existence was already known for the Rila Mts. Besides the species mentioned above, MOUCHA & CHVALA (1961) reported also *Tabanus quatuornotatus* (MEIGEN, 1820) from the Rila Mts. LECLERCQ (1966) reported the Rila Mts.

as a part of the geographical range of *T. quatuornotatus*, too.

At the end of the last century, GANEVA (1998) studied the tabanids from different types of pastures in Bulgaria, including two pastures in the Rila Mts. (at Govedartsi village and Malyovitsa hut). Twelve species of horseflies were registered in the area studied of the Rila Mts. Seven out of these have already been reported for the Rila Mts. by YOAKIMOV (1899), NEDYALKOV (1912) and DRENSKY (1929). In addition, she reported 5 further species for the tabanid fauna of the Rila Mts.: *Hybomitra ciureai* (SÉGUY, 1937), *Hybomitra distinguenda* (VERRALL, 1909), *Tabanus bromius* L., 1758, *Tabanus maculicornis* ZETTERSTEDT, 1842 and *Tabanus unifasciatus* LOEW, 1858. GANEVA (1998) also confirmed the presence of *H. auripila*, *Hybomitra aterrima* (MEIGEN, 1820) and *H. micans* in Bulgarian fauna on the basis of their registration in mountain pastures in the Rila Mts. and the Rhodopes.

On the basis of the literature data, 24 tabanid species have been reported from the Rila Mts. so far. They represent 31.16% of the 77 species known in

Bulgaria. This provoked our interest in studying the composition and zoogeographic characteristics of the tabanid fauna in the Rila Mts.

Material and Methods

Study area

The Rila Mts. is the highest mountain range in Bulgaria. Its territory is divided into 4 clearly distinguishable ridges: East Rila (Musala Ridge), Central Rila (Skakavets Ridge), Northwest Rila (Malyovitsa Ridge) and Southwest Rila (Kapatnik Ridge). The Rila Mts. is located at the border between moderate-continental and continental-Mediterranean climate but its relief features determine its climate. The average monthly temperatures reach their maximum value in July in the low parts of the Rila Mts., whereas the maximum temperatures are registered in August in areas at a middle and high altitude. The maximum precipitation value is reached in June on the northern slopes as well as on the southern ones (NIKOLOV & YORDANOVA 2002). The main part of the localities where horseflies have been collected are located in the Musala Ridge (18 localities) and the Malyovitsa Ridge (19 localities). The rest of the localities are situated in the Central and Southwest Rila.

Sampling and processing of specimens

The tabanid fauna was studied on the basis of materials collected from 47 localities on the territory of the Rila Mts. and also during eight route collections in 2010-2015. The altitude of the field collections varied from 427 m (L2) to 2324 m (RP6). Horse flies were collected by sweep net. The processing of the insects was carried out in the laboratory. The collected specimens were identified according to the keys of CHVÁLA *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 and the geographic coordinates. Altitude and geographical coordinates were obtained through measurement with a Garmin GPS Navigator Etrex Vista HCx.

The localities (new or based on published data) as well as the number and sex of the captured specimens and the sampling dates were indicated for each species. The species were listed according to the Catalogue of Palaearctic Diptera (CHVÁLA 1988).

List of localities

Locality 1 (L1). Semkovo, 1590 m a.s.l., 42.04559 N, 23.52106 E.

Locality 2 (L2). After the village of Dolna Banya, on the border between the municipalities of Dolna Banya and Samokov, 427 m a.s.l., 42.31626 N, 23.73321 E.

Locality 3 (L3). After Raduil village, right of the road in the direction of Borovets resort, 926 m a.s.l., 42.27896 N, 23.66559 E.

Locality 4 (L4). After the fork in the road to the Shumnatitsa chalet, 1342 m a.s.l., 42.27748 N, 23.62595 E.

Locality 5 (L5). The biotope against monastery Nativity of Virgin Mary before Samokov, 1089 m a.s.l., 42.29623 N, 23.56928 E.

Locality 6 (L6). By spruce forest, 4 km after Borovets resort in the direction of Govedarci village, 1427 m a.s.l., 42.26002 N, 23.56653 E.

Locality 7 (L7). 5 km after Govedarci village in mixed coniferous forest on the way to Malyovitsa resort, 1274 m a.s.l., 42.24071 N, 23.42066 E.

Locality 8 (L8). By the river near the village of Govedarci.

Locality 9 (L9). In the region of Boyanova cheshma on the way to Malyovitsa resort, 1625 m a.s.l., 42.21584 N, 23.39737 E.

Locality 10 (L10). Meadow located right of the road Malyovitsa-Govedartsi, 1305 m a.s.l., 42.23843 N, 23.41557 E.

Locality 11 (L11). 4 km before Raduil village in the direction of Kostenets town, 1016 m a.s.l., 42.27661 N, 23.64972 E.

Locality 12 (L12). Right of the road to Dolna Banya village, about 500 m before the village, 686 m a.s.l., 42.31373 N, 23.74567 E.

Locality 13 (L13). After the fork in the road to Belchin village, 42.344623 N, 23.400560 E.

Locality 14 (L14). Hotel Bor, Panichishte, 1452 m a.s.l., 42.26608 N, 23.29185 E.

Locality 15 (L15). In the region of Panichishte resort, north of Panorama Hotel, 1440 m a.s.l., 42.26852 N, 23.29531 E.

Locality 16 (L16). Meadow in the pine forest, 1499 m a.s.l., 42.26821 N, 23.29125 E.

Locality 17 (L17). To the right of the road after Rila town, before convent Orlitsa.

Locality 18 (L18). At the fork in the road to Padala village, 42.128121 N, 23.167920 E.

Locality 19 (L19). Meadow to the right of the road in the direction of Rila Monastery, 829 m a.s.l., 42.12389 N, 23.24472 E.

Locality 20 (L20). At the fork in the road to the Vladichina polyana, 1034 m a.s.l., 42.11420 N, 23.31573 E.

Locality 21 (L21). Meadow located after Rila Monastery, the right of the road to Kirilova polyana, 1211 m a.s.l., 42.14351 N, 23.36172 E.

Locality 22 (L22). Meadow located after Pastra village, near the river, to the right of the road to Rila town, 685 m a.s.l., 42.12299 N, 23.270 E.

Locality 23 (L23). 400 m from the fork in the road to Padala village, 570 m a.s.l., 42.12777 N, 23.16912 E.

Locality 24 (L24). To the right of the road in the direction of Borovets-Kostenets, near the river, 931 m a.s.l., 42.27899 N, 23.65849 E.

Locality 25 (L25). 350 m before Raduil village in the direction of Kostenets town, 878 m a.s.l., 42.28448 N, 23.68043 E.

Locality 26 (L26). About 3.5 km after Sestrimo water power plant, 707 m a.s.l., 42.20739 N, 23.91925 E.

Locality 27 (L27). The deviation to the left of the road in the direction of Belmeken dam, 1526 m a.s.l., 42.15688 N, 23.86026 E.

Locality 28 (L28). In the region of dwarf pine belt, right of the road in the direction of Belmeken dam, 2082 m a.s.l., 42.16753 N, 23.82554 E.

Locality 29 (L29). Glade in spruce forest to the right of

the road in the direction of Yundola after Belmeken dam, 1668 m a.s.l., 42.07368 N, 23.81588 E.

Locality 30 (L30). After Belica town, in the direction of Semkovo resort, near the monument, 984 m a.s.l., 41.98592 N, 23.53095 E.

Locality 31 (L31). In the region of Suhoto ezero, over Semkovo resort, 2036 m a.s.l., 42.07235 N, 23.55684 E.

Locality 32 (L32). At the fork in the road to Macedonia chalet, 1509 m a.s.l., 42.04331 N, 23.51628 E.

Locality 33 (L33). Near the natural landmark "Kazanite", 1508 m a.s.l., 42.00625 N, 23.5203 E.

Locality 34 (L34). Before the fork to Livada Bachia site, right of the road in the direction of Yundola-Belovo, 1090 m a.s.l., 42.10041 N, 23.89002 E.

Locality 35 (L35). After Raduil village, in the direction of Kostenets town, 889 m a.s.l., 42.28291 N, 23.67588 E.

Locality 36 (L36). After Sapareva banya, right of the road in the direction of Panichiste resort, 1049 m a.s.l., 42.27121 N, 23.27645 E.

Locality 37 (L37). Left of the road, before the fork to Skakavitsa chalet 1562 m a.s.l., 42.24587 N, 23.31360 E.

Locality 38 (L38). To the right of the road to Samokov town, after Saparevo village, 739 m a.s.l., 42.32313 N, 23.30763 E.

Locality 39 (L39). Meadow to the right of the road in the direction of Borovets-Govedartsi, 1406 m a.s.l., 42.26501 N, 23.55948 E.

Locality 40 (L40). Meadow to the right of the road after the fork of Govedartsi, to the river, 1040 m a.s.l., 42.27921 N, 23.52723 E.

Locality 41 (L41). Meadow, right of the road to Malyovitsa resort, near the fishpond, 1185 m a.s.l., 42.5386 N, 23.45330 E.

Locality 42 (L42). In the region of Mala tsarkva village, 1202 m a.s.l., 42.26028 N, 23.5064 E.

Locality 43 (L43). After Beli Iskar village, in the direction of eco-huts Orlovi skali, 1181 m a.s.l., 42.26072 N, 23.54055 E.

Locality 44 (L44). In the region of eco-huts Orlovi skali, 1440 m a.s.l., 42.21130 N, 23.54967 E.

Locality 45 (L45). The pasture, to the right of the road in the direction of Beli Iskar-Samokov, near Samokov town, 1002 m a.s.l., 42.30766 N, 23.54025 E.

Locality 46 (L46). The deviation of the road Samokov-Dolna Banya, after the fork in the road to Gutsal village, 926 m a.s.l., 42.35884 N, 23.63667 E.

Locality 47 (L47). After Gutsal village, before the fork to Dolna Banya, 746 m a.s.l., 42.32727 N, 23.69955 E.

Route passages:

Route passage 1 (RP1): Holiday village „Sveta gora“ (1590 m a.s.l., 42.04559 N, 23.52106 E) - Semkovo chalet (1750 m a.s.l.) - through National Park "Rila", 1936 m a.s.l., 42.06626 N, 23.51613 E) - Vapski ezera (2261 m a.s.l., 42.07981 N, 23.52411 E).

Route passage 2 (RP2): The meadow at the base of the ski slope (1569 m a.s.l., 42.04404 N, 23.53386 E) - Stavreva reka river (1473 m a.s.l., 42.03964 N, 23.55359E).

Route passage 3 (RP3): In the region of Panichishte resort: Hotel Planinski ezera - Hotel Lira.

Route passage 4 (RP4): In the region of Panichishte resort: Hotel Bor (1452m a.s.l., 42.26608N, 23.29185E) - Hotel Lira (1454 m a.s.l.) to the ski lift: Pionerska chalet - Rilski ezera chalet (1471 m a.s.l., 42.25631 N, 23.29988 E).

Route passage 5 (RP5): From the ski lift Pionerska chalet (1471 m a.s.l., 42.25631 N, 23.29988 E) - in the direction of Lovna chalet.

Route passage 6 (RP6): Rilski ezera chalet (2117 m a.s.l.) - along the ridge of Rila Mts. to the lakes Babreka (2324 m a.s.l., 42.20866 N, 23.31174 E) and Bliznatsite (2301 m a.s.l., 42.20138 N, 23.31222 E) and back.

Route passage 7 (RP7): In the region of Borovets resort: from Hotel Olymp (1409 m a.s.l., 42.26004 N, 23.60301 E) - in the direction of ski slope Sitnyakovo and Zavrachitsa chalet to a place of altitude 1490 m a.s.l. and coordinates 42.25961 N, 23.61029 E.

Route passage 8 (RP8): In the region of Panichishte resort, from the complex of BDG (1425 m a.s.l., 42.25971 N, 23.29556 E) - through the forest to the ski lift away Pionerska chalet - Rilski ezera chalet (1480 m a.s.l., 42.25650 N, 23.29759 E).

Results and Discussion

Species composition

1401 tabanid specimens were captured for the study period; 1317♀+5♂ specimens were identified at the species level and 75♀+4♂ specimens were identified at the generic level. Totally, 34 species of 8 genera were recorded: *Silvius* (one species), *Chrysops* (three species), *Atylotus* (two species), *Hybomitra* (seven species), *Tabanus* (15 species), *Haematopota* (three species), *Dasyrhamphis* (one species) and *Philipomyia* (two species).

Hybomitra caucasica (ENDERLEIN, 1925), *H. muehlfeldi* (BRAUER, 1880) and *H. solstitialis* (MEIGEN, 1820) are reported for the first time for the fauna of Bulgaria.

Hybomitra caucasica is a Euro-Siberian forest species which is reported here for the Rila Mts. on the basis of 18 female specimens collected in 2010 (1♀, 7.8., Small Vapsko Lake), 2012 (11♀, 26.7., in the area of the lakes Bliznatsite and Babreka) and 2015 (2♀, 13.7., in the dwarf pine belt above Belmeken dam; 2♀, 14.7., the Sukhoto lake; 2♀, 6.8., Boyan's fountain). The biggest number of individuals of this species were collected in the area of the Bliznatsite and Babreka lakes at altitude 2301-2324 m a.s.l.

Hybomitra solstitialis is a Euro-Siberian forest species recorded in the Rila Mts. only during collection campaign in 2015: 12♀ (3♀, 13.7., captured on the road to Belmeken dam; 9♀, 14.7., Sukhoto lake) from localities at altitude 1526-2036 m a.s.l.

Hybomitra muehlfeldi is the third new species for Bulgarian fauna. In a zoogeographic aspect, it belongs to the taiga faunal complex. It was found in the Rila Mts. by only 1 ♀ captured on 13.7.2015 on the road to Belmeken dam, 1526 m a.s.l.

The following species were reported for the first time from the study region: *Silvius alpinus*, *Chrysops caecutiens*, *C. ludens*, *C. viduatus*, *Tabanus autumnalis*, *T. exclusus*, *T. regularis*, *T. sudeticus*, *T. obsolescens*, *Haematopota scutellata*, *H. subcylindrica* and *Dasyrhamphis ater*.

Thus, based on the summary of the literature data and the results of this study, 39 species in the Rila Mts. tabanid fauna have been recorded. *Hybomitra montana* (MEIGEN, 1820), reported for the Rila Mts. by DRENSKY (1929) but excluded from the list of the tabanid species of Bulgaria by CHVÁLA *et al.* (1972) and CHVÁLA (1988), is among them. The presence of this species in the fauna of Bulgaria is to be confirmed during further studies of mountain regions.

Zoogeographical aspects of the Rila Mountains tabanid fauna

The zoogeographic characteristics of the tabanid fauna of the Rila Mts. has been done on the basis of the region division of the tabanid fauna proposed by OLSUFJEV (1977; 1980) and data about the geographical distribution of the European tabanids by CHVÁLA *et al.* (1972).

According to OLSUFJEV (1977; 1980), the species found on the Rila Mts. territory belong to five faunistic complexes of two subregional fauna types: the Boreal-Eurasian fauna and the Mediterranean fauna. The Boreal-Eurasian subregional tabanid fauna is represented by 24 species of three faunistic complexes: Euro-Siberian forest (18 species), forest-steppe (four species) and taiga fauna complex (two species). The Mediterranean subregional tabanid fauna is represented on the Rila Mts. territory by 15 species, which belong to the South-European faunistic complex (14) and to the Mediterranean-Middle Asian faunistic complex (one species). Based on the above comments, it can be concluded that the Boreal-Eurasian species (61.54% of the registered species) predominate in the tabanid fauna of the Rila Mts.

Conclusion

Thirty-four species of eight genera were recorded during the study carried out in the Rila Mts., on the basis of the collected and processed material of 47 localities and 8 route collections. *Hybomitra caucasica*, *H. muehlfeldi* and *H. solstitialis* are reported about Bulgarian fauna for the first time. Fifteen out of the 34 species found are reported about the study region for the first time. The data summarized both from the literature and the results of the present study show that the tabanid fauna of the Rila Mts. is represented by 39 species.

List of species of the family Tabanidae in the Rila Mts.

Subfamily Chrysopsinae

Genus *Silvius* MEIGEN, 1820

Silvius (Silvius) alpinus (SCOPOLI, 1763)

New data: **L3**: 28.7.11, 3♀; **L7**: 28.7.11, 4♀; **L13**: 24.7.12, 2♀; **L22**: 29.7.14, 1♀; **L38**: 4.8.15, 1♀; **L41**: 6.8.15, 1♀; **L46**: 8.7.15, 1♀.

Genus *Nemorius* RONDANI, 1856

Nemorius vitripennis (MEIGEN, 1820)

Published data: NEDYALKOV (1912).

Genus *Chrysops* MEIGEN, 1803

Chrysops (Chrysops) caecutiens (LINNAEUS, 1758)

New data: **L4**: 28.7.11, 1♀; **L5**: 28.7.11, 2♀; **L6**: 28.7.11, 1♀; **L20**: 28.7.14, 1♀; **L24**: 20.6.15, 4♀; **L29**: 13.7.15, 2♀; **L33**: 15.7.15, 1♀; **L34**: 15.7.15, 1♀.

Chrysops (Chrysops) ludens LOEW, 1858

New data: **L6**: 28.7.11, 1♀; **L38**: 4.8.15, 3♀.

Chrysops (Chrysops) viduatus (FABRICIUS, 1794)

New data: **L7**: 28.7.11, 1♀.

Subfamily Tabaninae

Genus *Atylotus* OSTEN-SACKEN, 1876

Atylotus fulvus (MEIGEN, 1804)

Published data: NEDYALKOV (1912); DRENSKY (1929).

New data: **L27**: 13.7.15, 1♀; **L28**: 13.7.15, 1♀; **L30**: 13.7.15, 1♀; **L31**: 14.7.15, 1♀; **L38**: 4.8.15, 2♀.

Atylotus loewianus (VILLENEUVE, 1920)

Published data: DRENSKY (1929).

New data: **L2**: 28.7.11, 2♀; **L8**: 28.7.11, 1♀; **L9**: 6.8.15, 1♀; **L15**: 30.7.11, 2♀; **L22**: 29.7.14, 1♀; **L30**: 15.7.15, 4♀; **L35**: 3.8.15, 14♀; **L36**: 4.8.15, 3♀; **L38**: 4.8.15, 28♀; **L40**: 6.8.15, 10♀; **L41**: 6.8.15, 8♀; **L42**: 6.8.15, 2♀; **L46**: 7.8.15, 6♀; **L47**: 7.8.15, 5♀; **RP7**: 3.8.15, 1♀.

Genus *Hybomitra* ENDERLEIN, 1922

Hybomitra aterrima (MEIGEN, 1820)

Published data: DRENSKY (1929).

Hybomitra auripila (MEIGEN, 1820)

Published data: NEDYALKOV (1912); DRENSKY (1929).

New data: **L9**: 29.7.11, 2♀; **L27**: 13.7.15, 1♀; **L28**: 13.7.15, 2♀.

Hybomitra caucasica (ENDERLEIN, 1925)*

New data: **L9**: 6.8.15, 2♀; **L28**: 13.7.15, 2♀; **L31**: 14.7.15, 2♀; **RP1**: 7.8.10, 1♀; **RP6**: 26.7.12, 11♀.

Hybomitra ciureai (SÉGUY, 1937)

Published data: GANEVA (1998).

New data: **L12**: 20.6.15, 1♀; **L25**: 20.6.15, 1♀; **L30**: 13.7.15, 1♀; **L38**: 4.8.15, 1♀; **RP2**: 8.8.10, 1♀.

Hybomitra distinguenda (VERRALL, 1909)

Published data: GANEVA (1998).

New data: **L24**: 20.6.15, 3♀; **L27**: 13.7.15, 1♀.

Hybomitra micans (MEIGEN, 1804)

Published data: YOAKIMOV (1899); GANEVA (1998).

New data: **L28**: 13.7.15, 1♀.

Hybomitra montana (MEIGEN, 1820)

Published data: DRENSKY (1929).

Hybomitra muehlfeldi (BRAUER, 1880)*

New data: **L27**: 13.7.15, 1♀.

Hybomitra solstitialis (MEIGEN, 1820)*

New data: **L29**: 13.7.15, 3♀; **L31**: 14.7.15, 9♀.

Genus *Tabanus* LINNAEUS, 1758

Tabanus autumnalis LINNAEUS, 1761

New data: **L43**: 7.8.15, 1♀.

Tabanus bovinus LINNAEUS, 1758

Published data: YOAKIMOV (1899); GANEVA (1998).

New data: **L24**: 20.6.15, 1♀; **L25**: 20.6.15, 1♀.

Tabanus bromius LINNAEUS, 1758

Published data: MOUCHA & CHVALA (1961); GANEVA (1998).

New data: **L2**: 28.7.11, 2♀; **L3**: 28.7.11, 2♀; **L4**: 28.7.11, 1♀; 3.8.15, 1♀; **L5**: 28.7.11, 6♀; **L6**: 28.7.11, 3♀; **L7**: 28.7.11, 5♀; **L8**: 28.7.11, 17♀; **L9**: 29.7.11, 1♀; **L11**: 30.7.11, 8♀; **L12**: 20.6.15, 3♀; **L13**: 24.7.12, 1♀; **L17**: 28.7.14, 1♀; **L22**: 29.7.14, 5♀; **L23**: 29.7.14, 1♀; **L24**: 20.6.15, 1♀; **L25**: 20.6.15, 3♀; **L26**: 13.7.15, 2♂; **L27**: 13.7.15, 2♀; **L29**: 13.7.15, 1♀; **L30**: 13.7.15, 27♀; 15.7.15, 46♀; **L32**: 15.7.15, 2♀; **L33**: 15.7.15, 2♀; **L34**: 15.7.15, 1♀; **L35**: 3.8.15, 10♀; **L36**: 4.8.15, 6♀; **L38**: 4.8.15, 23♀; **L40**: 6.8.15, 4♀; **L41**: 6.8.15, 8♀; **L42**: 6.8.15, 2♀; **L43**: 7.8.15, 4♀; **L45**: 7.8.15, 5♀; **L46**: 7.8.15, 3♀; **L47**: 7.8.15, 3♀; **RP7**: 3.8.15, 2♀.

***Tabanus cordiger* MEIGEN, 1820**

Published data: DRENSKY (1929); GANEVA (1998).

New data: **L28**: 13.7.15, 1♀; **L30**: 13.7.15, 1♀; 15.7.15, 2♀; **L38**: 4.8.15, 1♀; **L45**: 7.8.15, 1♀; **L47**: 7.8.15, ♀.

***Tabanus exclusus* PANDELLÉ, 1883**

New data: **L22**: 29.7.14, 9♀; **L23**: 29.7.14, 1♀; **L26**: 13.7.15, 1♀.

***Tabanus glaucopis* MEIGEN, 1820**

Published data: DRENSKY (1929); MOUCHA & CHVALA (1961); GANEVA (1998).

New data: **L1**: 9.8.10, 1♀; **L2**: 28.7.11, 3♀; **L3**: 28.7.11, 4♀; **L4**: 28.7.11, 5♀; 24.7.12, 3♀; 3.8.15, 28♀; **L5**: 28.7.11, 3♀; **L6**: 28.7.11, 9♀; **L7**: 28.7.11, 18♀; **L8**: 28.7.11, 10♀; **L9**: 29.7.11, 1♀; 6.8.15, 3♀; **L10**: 29.7.11, 1♀; **L11**: 30.7.11, 9♀; **L14**: 26.7.12, 1♀; **L15**: 27.7.12, 69♀; **L16**: 27.7.12, 10♀; **L18**: 28.7.14, 2♀; **L19**: 28.7.14, 4♀; **L20**: 28.7.14, 4♀; 29.7.14, 3♀; **L21**: 29.7.14, 2♀; **L22**: 29.7.14, 14♀; **L23**: 29.7.14, 1♀; **L26**: 13.7.15, 1♀; **L27**: 13.7.15, 3♀; **L28**: 13.7.15, 1♀; **L29**: 13.7.15, 2♀; **L30**: 13.7.15, 2♀; 15.7.15, 1♀; **L31**: 14.7.15, 1♀; **L33**: 15.7.15, 1♀; **L34**: 15.7.15, 1♀; **L35**: 3.8.15, 10♀; **L36**: 4.8.15, 102♀; **L37**: 4.8.15, 18♀; **L38**: 4.8.15, 4♀+1♂; **L39**: 6.8.15, 2♀; **L40**: 6.8.15, 9♀; **L41**: 6.8.15, 8♀; **L42**: 6.8.15, 6♀; **L43**: 7.8.15, 9♀; **L44**: 7.8.15, 7♀; **L45**: 7.8.15, 1♀; **L46**: 7.8.15, 5♀; **L47**: 7.8.15, 7♀; **RP2**: 8.8.10, 9♀; **RP3**: 24.7.12, 20♀; **RP4**: 25.7.12, 34♀; **RP5**: 25.7.12, 6♀; **RP8**: 4.8.15, 107♀.

***Tabanus maculicornis* ZETTERSTEDT, 1842**

Published data: GANEVA (1998).

New data: **L4**: 3.8.15, 1♀; **L7**: 28.7.11, 4♀; **L8**: 28.7.11, 2♀; **L11**: 30.7.11, 1♀; **L12**: 20.6.15, 4♀; **L22**: 29.7.14, 1♀; **L24**: 20.6.15, 8♀; **L25**: 20.6.15, 1♀; **L26**: 13.7.15, 1♀; **L27**: 13.7.15, 2♀; **L29**: 13.7.15, 3♀; **L30**: 13.7.15, 6♀; 15.7.15, 4♀; **L33**: 15.7.15, 2♀; **L34**: 15.7.15, 2♀; **L38**: 4.8.15, 2♀; **L41**: 6.8.15, 1♀.

***Tabanus miki* BRAUER, 1880**

Published data: DRENSKY (1929); GANEVA (1998).

New data: **L20**: 28.7.14, 1♀; **L30**: 13.7.15, 4♀; 15.7.15, 1♀; **L38**: 4.8.15, 1♀.

***Tabanus quatuornotatus* MEIGEN, 1820**

Published data: MOUCHA & CHVALA (1961); LECLERCQ (1966).

New data: **L24**: 20.6.15, 1♀.

***Tabanus regularis* JAENNICKE, 1866**

New data: **L35**: 3.8.15, 1♀; **RP7**: 3.8.15, 1♀.

***Tabanus spodopterus* MEIGEN, 1820**

Published data: NEDYALKOV (1912); DRENSKY (1929); MOUCHA & CHVALA (1961); OLSUFJEV *et al.* (1967); CHVALA *et al.* (1972).

New data: **L5**: 28.7.11, 2♀; **L6**: 28.7.11, 2♀; **L8**: 28.7.11, 1♀; **L13**: 24.7.12, 1♀; **L38**: 4.8.15, 1♀; **L42**: 6.8.15, 1♀; **L45**: 7.8.15, 1♀.

***Tabanus sudeticus* ZELLER, 1842**

New data: **L3**: 28.7.11, 2♀; **L4**: 3.8.15, 1♀; **L7**: 28.7.11,

1♀; **L12**: 20.6.15, 1♀; **L22**: 29.7.14, 1♀; **L26**: 13.7.15, 1♀; **L27**: 13.7.15, 1♀; **L30**: 15.7.15, 2♀; **L35**: 3.8.15, 1♀; **L36**: 4.8.15, 1♂; **L43**: 7.8.15, 1♀; **L47**: 7.8.15, 1♀; **RP3**: 24.7.12, 1♀; **RP7**: 3.8.15, 1♀.

***Tabanus obsolescens* PANDELLÉ, 1883**

New data: **L36**: 4.8.15, 2♀.

***Tabanus tergestinus* EGGER, 1859**

Published data: NEDYALKOV (1912); DRENSKY (1929); GANEVA (1998).

New data: **L2**: 28.7.11, 1♀; **L3**: 28.7.11, 3♀; **L4**: 3.8.15, 2♀; **L5**: 28.7.11, 2♀; **L6**: 28.7.11, 6♀; **L7**: 28.7.11, 1♀; **L11**: 30.7.11, 3♀; **L12**: 20.6.15, 1♀; **L22**: 29.7.14, 6♀; **L23**: 29.7.14, 1♀; **L26**: 13.7.15, 2♀; **L29**: 13.7.15, 2♀; **L30**: 13.7.15, 10♀; 15.7.15, 15♀; **L33**: 15.7.15, 1♀; **L35**: 3.8.15, 4♀; **L38**: 4.8.15, 7♀+1♂; **L40**: 6.8.15, 3♀; **L45**: 7.8.15, 1♀; **L46**: 7.8.15, 2♀; **RP2**: 8.8.10, 1♀; **RP4**: 25.7.12, 1♀; **RP7**: 3.8.15, 1♀.

***Tabanus unifasciatus* LOEW, 1858**

Published data: GANEVA (1998).

New data: **L5**: 28.7.11, 1♀; **L35**: 3.8.15, 1♀; **L41**: 6.8.15, 2♀; **L47**: 7.8.15, 1♀.

Genus *Haematopota* MEIGEN, 1803

***Haematopota grandis* MEIGEN, 1820**

Published data: DRENSKY (1929).

***Haematopota italica* MEIGEN, 1804**

Published data: NEDYALKOV (1912).

***Haematopota pluvialis* (LINNAEUS, 1758)**

Published data: YOAKIMOV (1899); NEDYALKOV (1912); GANEVA (1998).

New data: **L2**: 28.7.11, 2♀; **L4**: 28.7.11, 1♀; **L5**: 28.7.11, 1♀; **L6**: 28.7.11, 5♀; **L7**: 28.7.11, 9♀; **L8**: 28.7.11, 1♀; **L9**: 29.7.11, 2♀; **L10**: 29.7.11, 2♀; **L12**: 20.6.15, 10♀; **L20**: 28.7.14, 4♀; 29.7.14, 1♀; **L22**: 29.7.14, 1♀; **L24**: 20.6.15, 1♀; **L27**: 13.7.15, 2♀; **L28**: 13.7.15, 1♀; **L29**: 13.7.15, 7♀; **L30**: 15.7.15, 7♀; **L34**: 15.7.15, 3♀; **L36**: 4.8.15, 1♀; **L37**: 4.8.15, 1♀; **L38**: 4.8.15, 1♀; **L39**: 6.8.15, 2♀; **L41**: 6.8.15, 1♀; **L43**: 7.8.15, 1♀; **L44**: 7.8.15, 3♀; **L46**: 7.8.15, 4♀; **RP1**: 7.8.10, 2♀; **RP2**: 8.8.10, 1♀; **RP5**: 25.7.12, 1♀; **RP8**: 4.8.15, 1♀.

***Haematopota scutellata* (OLSUFJEV, MOUCHA & CHVALA, 1964)**

New data: **L4**: 3.8.15, 2♀; **L5**: 28.7.11, 1♀; **L9**: 6.8.15, 8♀; **L14**: 25.7.12, 1♀; **L22**: 29.7.14, 2♀; **L26**: 13.7.15, 1♀; **L35**: 3.8.15, 2♀; **L37**: 4.8.15, 5♀; **L38**: 4.8.15, 2♀; **L41**: 6.8.15, 3♀; **L42**: 6.8.15, 1♀; **L45**: 7.8.15, 1♀; **L46**: 7.8.15, 7♀; **RP2**: 8.8.10, 1♀; **RP5**: 25.7.12, 3♀.

***Haematopota subcylindrica* PANDELLÉ, 1883**

New data: **RP2**: 8.8.10, 1♀.

Genus *Dasyrhamphus* ENDERLEIN, 1922

***Dasyrhamphus ater* (ROSSI, 1790)**

New data: **L27**: 13.7.15, 1♀.

Genus *Philipomyia* OLSUFJEV, 1964

***Philipomyia aprica* (MEIGEN, 1820)**

Published data: DRENSKY (1929); MOUCHA & CHVALA (1961); CHVALA *et al.* (1972).

New data: **L2**: 28.7.11, 1♀; **L6**: 28.7.11, 1♀; **L11**: 30.7.11, 2♀; **L20**: 29.7.14, 1♀; **L21**: 29.7.14, 2♀; **L28**: 13.7.15, 5♀; **L34**: 15.7.15, 3♀; **L35**: 3.8.15, 1♀; **L41**: 6.8.15, 1♀; **L44**: 7.8.15, 1♀.

***Philipomyia graeca* (FABRICIUS, 1794)**

Published data: NEDYALKOV (1912).

New data: **L9**: 6.8.15, 1♀; **L12**: 20.6.15, 1♀; **L18**: 28.7.14, 1♀; **L21**: 29.7.14, 2♀; **L24**: 20.6.15, 3♀; **L25**: 20.6.15, 2♀; **L26**: 13.7.15, 5♀; **L28**: 13.7.15, 6♀; **L29**: 13.7.15, 2♀; **L30**: 15.7.15, 1♀; **L31**: 14.7.15, 1♀; **L32**: 15.7.15, 1♀.

Table 1. Species composition and number of captured specimens of tabanids (Diptera: Tabanidae) on the territory of the Rila Mountains (2010-2015). The new species for the Bulgarian tabanid fauna are marked with asterisk

Species	7-9.8. 2010	28-30.7. 2011	24-27.7 2012	28-29.7. 2014	June-August 2015	Total number of specimens	Relative abundance RA
<i>Silvius alpinus</i>		7♀	2♀	1♀	3♀	13♀	0.98
<i>Chrysops caecutiens</i>		4♀		1♀	8♀	13♀	0.98
<i>Chrysops ludens</i>		1♀			3♀	4♀	0.30
<i>Chrysops viduatus</i>		1♀				1♀	0.08
<i>Atylotus fulvus</i>					6♀	6♀	0.45
<i>Atylotus. loewianus</i>		5♀		1♀	82♀	88♀	6.66
<i>Hybomitra auripila</i>		2♀			3♀	5♀	0.38
<i>Hybomitra caucasica*</i>	1♀		11♀		6♀	18♀	1.36
<i>Hybomitra ciureai</i>	1♀				4♀	5♀	0.38
<i>Hybomitra distinguenda</i>					4♀	4♀	0.30
<i>Hybomitra micans</i>					1♀	1♀	0.08
<i>Hybomitra muehlfeldi*</i>					1♀	1♀	0.08
<i>Hybomitra solstitialis*</i>					12♀	12♀	0.91
<i>Tabanus autumnalis</i>					1♀	1♀	0.08
<i>Tabanus bovinus</i>					2♀	2♀	0.15
<i>Tabanus bromius</i>		45♀	1♀	7♀	159♀+2♂	212♀+2♂	16.19
<i>Tabanus cordiger</i>					7♀	7♀	0.53
<i>Tabanus exclusus</i>				10♀	1♀	11♀	0.83
<i>Tabanus glaucopsis</i>	10♀	63♀	143♀	30♀	339♀+1♂	585♀+1♂	44.33
<i>Tabanus maculicornis</i>		7♀		1♀	37♀	45♀	3.40
<i>Tabanus miki</i>				1♀	6♀	7♀	0.53
<i>Tabanus quatuornotatus</i>					1♀	1♀	0.08
<i>Tabanus regularis</i>					2♀	2♀	0.15
<i>Tabanus spodopterus</i>		5♀	1♀		3♀	9♀	0.68
<i>Tabanus sudeticus</i>		3♀	1♀	1♀	10♀+1♂	15♀+1♂	1.21
<i>Tabanus obsolescens</i>					2♀	2♀	0.15
<i>Tabanus tergestinus</i>	1♀	16♀	1♀	7♀	51♀+1♂	76♀+1♂	5.82
<i>Tabanus unifasciatus</i>		1♀			4♀	5♀	0.38
<i>Haematopota pluvialis</i>	3♀	23♀	1♀	6♀	46♀	79♀	5.98
<i>Haematopota scutellata</i>	1♀	1♀	4♀	2♀	32♀	40♀	3.02
<i>Haematopota subcylindrica</i>	2♀					2♀	0.15
<i>Dasyrhamphis ater</i>					1♀	1♀	0.08
<i>Philipomyia aprica</i>		4♀		3♀	11♀	18♀	1.36
<i>Philipomyia graeca</i>				3♀	23♀	26♀	1.96
Total number of identified specimens	19♀	188♀	165♀	74♀	871♀+5♂	1317♀+5♂	100%
Unidentified specimens	-	37♀+3♂	4♀+1♂	2♀	32♀	75♀+4♂	
Total number of specimens	19	228	170	76	908	1401	
Recorded species	7	16	9	14	32	34	

Table 2. Horse flies of Rila Mts. as reported by various sources

Species	YOAKIMOV (1899)	NEDYALKOV (1912)	DRENSKY (1929)	MOUCHA & CHVÁLA (1961)	LECLERCQ (1966)	OLSHURIEV et al. (1967)	CHVÁLA et al. (1972)	GANEVA (1998)	PRESENT STUDY
<i>Silvius alpinus</i>									+
<i>Nemorius vitripennis</i>		+							
<i>Chrysops caecutiens</i>									+
<i>Chrysops ludens</i>									+
<i>Chr. viduatus</i>									+
<i>Atylotus fulvus</i>		+	+						+
<i>Atylotus loewianus</i>			+						+
<i>Hybomitra aterrima</i>			+						
<i>H. auripila</i>		+	+						+
Hybomitra caucasica *									+
<i>H. ciureai</i>								+	+
<i>H. distinguenda</i>								+	+
<i>H. micans</i>	+							+	+
<i>H. montana</i>			+						
Hybomitra muehlfeldi *									+
Hybomitra solstitialis *									+
<i>Tabanus autumnalis</i>									+
<i>T. bovinus</i>	+							+	+
<i>T. bromius</i>				+				+	+
<i>T. cordiger</i>			+					+	+
<i>T. exclusus</i>									+
<i>T. glaucopis</i>			+	+				+	+
<i>T. maculicornis</i>								+	+
<i>T. miki</i>			+					+	+
<i>T. quatuornotatus</i>				+	+				+
<i>T. regularis</i>									+
<i>T. spodopterus</i>		+	+	+		+	+		+
<i>T. sudeticus</i>									+
<i>T. obsolescens</i>									+
<i>T. tergestinus</i>		+	+					+	+
<i>T. unifasciatus</i>								+	+
<i>Haematopota grandis</i>			+						
<i>H. italica</i>		+							
<i>H. pluvialis</i>	+	+						+	+
<i>H. scutellata</i>									+
<i>H. subcylindrica</i>									+
<i>Dasyrhamphis ater</i>									+
<i>Philipomyia aprica</i>			+	+			+		+
<i>Philipomyia graeca</i>			+						+
Total number of species 39	3	7	13	5	1	1	2	12	34

References

- CHVÁLA M. 1988. Family Tabanidae. In: Soos A. and L. Papp (Eds.): Catalogue of Palaearctic Diptera, Budapest, Akadémiai kiadó, **5**: 97-191.
- CHVÁLA M., LYNEBORG L. & MOUCHA J. 1972. The Horse Flies of Europe (Diptera, Tabanidae). Copenhagen. Entomological Society of Copenhagen. 500 p.
- DRENSKY P. 1929. Blutsaugende Fliegen aus der Familie der Tabanidae (Bremsen) in Bulgarien. *Bulletin of the Royal Institutes of Natural Sciences*, Sofia **2**: 55-128. (in Bulgarian).
- GANEVA D. 1998. Faunal composition of tabanids (Tabanidae, Diptera) in cattle pastures of different types in Bulgaria. *Acta Entomologica Bulgarica* **4**(1): 10-15 (in Bulgarian).
- LECLERCQ M. 1966. Révision systématique et biogéographique des Tabanidae (Diptera) Paléarctiques. *Mémoires de l'Institut Royal des Sciences Naturelles de Belgique* 80 (2.série): 1-237.
- MOUCHA J. & CHVÁLA M. 1961. A contribution to knowledge of the Tabanidae (Diptera) of Bulgaria. *Acta Faunistica Entomologica Musei Nationalis Prague* **7**: 31-41.
- NEDYALKOV N. 1912. Sixth contribution to entomological fauna of Bulgaria. *Journal of Bulgarian Academy of Sciences* **2**: 177-218. (in Bulgarian).
- NIKOLOV V. & YORDANOVA M. 2002. The Mountains in Bulgaria. Sofia. (Academic Publishing House Professor Marin Drinov), 226 p. (in Bulgarian).
- OLSUFJEV N. 1977. Tabanidae. In: Fauna USSR. **7**(2). Leningrad. (Publishing House Nauka). 434 p. (in Russian).
- OLSUFJEV N. 1980. Typification of tabanid fauna and zoogeographical regions in the territory of the USSR. In: VORONOV A. G. & DROZDOV N. N. (Eds.): Contemporary problems of zoogeography, pp. 81-115. (In Russian).
- OLSUFJEV N., MOUCHA J. & CHVÁLA M. 1967. Zur Taxonomie und Verbreitung der europäischen und Kleinasiatischen arten der *Tabanus bovinus*-Gruppe (Diptera, Tabanidae). *Acta Entomologica Bohemoslovakia* **64**: 303-313.
- YOAKIMOV D. 1899. A contribution to the insect fauna of Rila Mountains. *Journal Periodic*, **11**, 60: 858-884 (in Bulgarian).