

## HORSEFLIES (DIPTERA: TABANIDAE) OF SOUTH - EAST HERZEGOVINA (BOSNIA AND HERZEGOVINA)

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The article presents the horsefly fauna (Diptera: Tabanidae) of the south-east Herzegovina region, Bosnia and Herzegovina. During the 1987-1990 and 2003–2005 periods we collected a total of 847 horseflies representing 27 species and classified in eight genera. The most common genus is *Tabanus* represented with 12 species, followed by the genera *Hybomitra* – 6, *Haematopota* – 3, *Chrysops* – 2, and *Atylotus*, *Dasyrhamphus*, *Philipomyia* and *Therioplectes* with 1 species, respectively. The five most abundant species were *Hybomitra muehlfeldi* (34.36 %), *Tabanus bromius* (12.04 %), *Chrysops viduatus* 9.33 %, *Hybomitra ciureai* (8.85 %) and *Philipomyia greaca* (6.26 %), which account for 70.84 % of the total number of collected specimens. New species recorded for this region and the for the whole of the state of Bosnia and Herzegovina are: *Tabanus eggeri*, *Tabanus darimonti* and *Tabanus shanonnellus*.

### Fauna, Tabanidae, Diptera, Bosnia and Herzegovina

ALMA MIKUŠKA<sup>1</sup>, STJEPAN KRČMAR<sup>1</sup> & JÓZSEF MIKUSKA<sup>†</sup>:  
Obadi (Diptera: tabanidae) u jugoistočnoj Hercegovini (Bosna i Hercegovina).  
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U ovom radu prvi je put predstavljena fauna obada (Diptera: Tabanidae) jugoistočne Hercegovine. Utvrđeno je 27 vrsta obada zastupljenih s osam rodova. Rod *Tabanus* zastupljen je s 12 vrsta, *Hybomitra* sa šest, *Haematopota* s tri, *Chrysops* s dvije, te *Atylotus*, *Dasyrhamphus*, *Philipomyia* i *Therioplectes* s po jednom vrstom. Pet najbrojnijih vrsta jesu: *Hybomitra muehlfeldi* (34,36 %), *Tabanus bromius* (12,04 %), *Chrysops viduatus* (9,33 %), *Hybomitra ciureai* (8,85 %) te *Philipomyia greaca* (6,26 %) što čini 70,84 % svih uzorkovanih jedinki. Po prvi su put zabilježene tri vrste obada: *Tabanus eggeri*, *Tabanus darimonti* i *Tabanus shanonnellus*, koje su nove za istraživano područje, kao i za faunu Bosne i Hercegovine.

### fauna, obadi, dvokrilci, Bosna i Hercegovina

## Introduction

The fauna of the horseflies in Bosnia and Herzegovina was only partly studied during the last 110 years. The first reliable records of the horseflies in Bosnia

and Herzegovina were those of Strobl (1898, 1902), followed by those of Leclercq (1959, 1960, 1965, 1967, 1968, 1976) and Moucha (1959). On the other hand, the family Tabanidae has been intensely studied in the Mediterranean region, including the Balkan peninsula, and there are several comprehensive papers or monographs dealing with the fauna of Southern Europe (Kröber, 1932; Leclercq, 1960, 1967; Chvála et al., 1972). Furthermore, extensive faunistic and ecological research into the horseflies in the Mediterranean part of Croatia has been carried out, and several papers have been published (Krčmar, 1999; Krčmar et al., 1999; Krčmar & Durbešić, 1999; Krčmar et al., 2003). However, south-east Herzegovina, which is also a part of the Mediterranean region, has been insufficiently studied, and only two articles contain data on horseflies from this region (Strobl, 1902; Krčmar et al., 2002). This lack of data on the distribution of horseflies induced us to start a systematic survey in this region. The article presents comprehensive data on the horsefly fauna (Diptera: Tabanidae) of the south-east Herzegovina region, Bosnia and Herzegovina.

### Material and methods

We conducted our study in the area of south-east Herzegovina from the Neretva River in the west to Trebinje in the east (Figure 1). Particular attention was given to the Hutovo Blato wetlands, as well as to Popovo polje with the Trebišnjica River. The study area has a Mediterranean and sub-Mediterranean climate. Forests in different stages, including degraded forms of maquis and garrigues developed on rocky soils, belong to the *Quercus-Ostryetum carpinifoliae* and *Quercus pubescentis-Carpinetum orientalis* communities. Various wetland habitats, including extensive reed beds, sedge marshes, alluvial *Salix* and *Populus* forests are represented along the Neretva and Hutovo Blato. Popovo polje and the Trebišnjica are represented with various extensively managed tracts of agricultural land, as well as abandoned vineyards and pastures.

The study was carried out during the 1987-1990 and 2003-2005 periods. The horseflies were collected during vegetation seasons at 25 localities covering 13 UTM grids of Bosnia and Herzegovina (Figure 1). Sampling was made by sampling net on grazing cattle or cars and by hand inside a car. The collected specimens were determined according to the keys of Chvála et al., (1972) and Majer (1987). Names of species were written according to the catalogue of Chvála (1988).



Figure 1. Collecting localities of horseflies displayed on the UTM grid of Bosnia and Herzegovina

## Results

During the study period we collected a total of 847 horseflies representing 28 species and eight genera (Table 1). The most common genus is *Tabanus* represented with 12 species, followed by the genera *Hybomitra* – 6, *Chrysops* – 4, *Haematopota* – 3, and *Atylotus*, *Dasyramphus*, *Philipomyia* and *Theriopectes* with 1 species each.

The five most abundant species were *Hybomitra muehlfeldi* (34.36 %), *Tabanus bromius* (12.04 %), *Chrysops viduatus* (9.33 %), *Hybomitra ciureai* (8.85 %) and *Philipomyia greaca* (6.26 %), which account for 70.84 % of the total number of specimens collected (Table 1). All the other species accounted for less than 5 % of the total catch.

Table 1. The number of species of horseflies collected in the research area

|    | Species                                                                 | No. of specimens | Percentage |
|----|-------------------------------------------------------------------------|------------------|------------|
| 1  | <b>Chrysops caecutiens</b> (Linnaeus, 1758)                             | 3                | 0.35 %     |
| 2  | <i>Chrysops viduatus</i> (Fabricius, 1794)                              | 79               | 9.33 %     |
| 3  | <i>Atylotus loewianus</i> (Villeneuve, 1920)                            | 7                | 0.83 %     |
| 4  | <i>Therioplectes gigas</i> (Herbst, 1787)                               | 2                | 0.24 %     |
| 5  | <i>Hybomitra acuminata</i> (Loew, 1858)                                 | 9                | 1.06 %     |
| 6  | <i>Hybomitra ciureai</i> (Séguy, 1937)                                  | 75               | 8.85 %     |
| 7  | <i>Hybomitra muehlfeldi</i><br>(Brauer in Brauer and Bergenstamm, 1880) | 291              | 34.36 %    |
| 8  | <i>Hybomitra pilosa</i> (Loew, 1858)                                    | 35               | 4.13 %     |
| 9  | <i>Hybomitra solstitialis</i> (Meigen, 1820)                            | 1                | 0.12 %     |
| 10 | <i>Hybomitra ukrainica</i> (Olsufjev, 1952)                             | 10               | 1.18 %     |
| 11 | <i>Tabanus autumnalis</i> Linnaeus, 1761                                | 3                | 0.35 %     |
| 12 | <i>Tabanus bifarius</i> Loew, 1858                                      | 17               | 2.01 %     |
| 13 | <i>Tabanus bromius</i> Linnaeus, 1758                                   | 102              | 12.04 %    |
| 14 | <i>Tabanus cordiger</i> Meigen, 1820                                    | 29               | 3.42 %     |
| 15 | <i>Tabanus darimonti</i> Leclercq, 1964                                 | 1                | 0.12 %     |
| 16 | <i>Tabanus eggeri</i> Schiner, 1868                                     | 13               | 1.53 %     |
| 17 | <i>Tabanus exclusus</i> Pandellé, 1883                                  | 43               | 5.08 %     |
| 18 | <i>Tabanus lunatus</i> Fabricius, 1794                                  | 1                | 0.12 %     |
| 19 | <i>Tabanus shannonellus</i> Kröber, 1922                                | 20               | 2.36 %     |
| 20 | <i>Tabanus spodopterus</i> Meigen, 1820                                 | 2                | 0.24 %     |
| 21 | <i>Tabanus sudeticus</i> Zeller, 1842                                   | 23               | 2.72 %     |
| 22 | <i>Tabanus tergestinus</i> Egger, 1859                                  | 20               | 2.36 %     |
| 23 | <i>Haematopota grandis</i> Meigen, 1820                                 | 2                | 0.24 %     |
| 24 | <i>Haematopota italica</i> Meigen, 1804                                 | 2                | 0.24 %     |
| 25 | <i>Haematopota pandazisi</i> Kröber, 1936                               | 2                | 0.24 %     |
| 26 | <i>Dasyrhamphis ater</i> (Rossi, 1790)                                  | 1                | 0.12 %     |
| 27 | <i>Philipomyia graeca</i> (Fabricius, 1794)                             | 53               | 6.26 %     |
|    | <b>Total</b>                                                            | <b>847</b>       |            |

### New species for south-east Herzegovina and Bosnia and Hercegovina

During our study we have recorded three new species that previously were not previously reported in Bosnia and Herzegovina:

1. *Tabanus eggeri* (Schiner, 1868) - 13♀: Cerovica (YH26) 23.07.2004 4♀; Gradac (YH25) 23.07.2004 4♀; Hutovo Selo (YH 36) 23.07.2004 2♀; Jezero Vrutak (YH 35) 23.07.2004 3♀. This is a Mediterranean species, recorded in South France, Italy, Albania, Bulgaria and in North Africa (Morocco). Data from Portugal, Spain and Israel need to be verified (Chvála et al., 1972). *Tabanus eggeri* is recorded for the Mediterranean part of Croatia with the peak of abundance in July (Krčmar & Durbešić, 1999).
2. *Tabanus darimonti* (Leclercq, 1964) - 1♀: Cerovica (YH26) 23.07.2004. This species was hitherto known only from Portugal, Spain, North Africa (Morocco) and Turkey. Male specimens of *Tabanus darimonti* are not scientifically described (Chvala et al., 1972). Recently, this species was recorded in Croatia – Blace (YH07) 16.08.2001 – by the second author.
3. *Tabanus shannonellus* (Kröber, 1936) - 20♀: Cerovica (YH26) 23.07.2004 2♀; Hutovo selo (YH36) 02.08.2005. 18♀. This species was hitherto known only from Greece and Bulgaria (Chvála et al., 1972), but was recorded on the Croatian coast and islands (Krčmar, 1999) with the peak of abundance in August (Krčmar & Durbešić, 1999).

### Discussion

During the study period we recorded 27 species of horseflies in south-east Herzegovina. According to literature data, the only species that we have not sampled is *Dasyrhamphus umbrinus*. This species (1 male and 2 female) was recorded near Stolac (YH47) by Winneguth (Strobl, 1902) and the specimens are stored in the Natural History Museum in Sarajevo. Thus, the complete check-list of horseflies of South-east Herzegovina includes 28 species.

Comparing to the fauna of the whole of Bosnia and Herzegovina, the studied region holds 47.45 % of the 61 species of horseflies recorded for the state (Mikuska, 2007). In the Mediterranean region of neighboring Croatia there are 64 species of recorded horseflies (Krčmar, 1999; Krčmar and Durbešić, 2001; Krčmar et al. 2003). This difference in total numbers could be explained by the

Mediterranean part of Croatia being far larger than south-east Herzegovina, the large numbers of islands along Croatian coast, as well as lack of recent systematic research in the Bosnia and Herzegovina, which has been hampered. Our study was performed close to the extensive mine-fields along Popovo polje, which prevented an unrestricted survey of the area. Despite this, we have managed to record three new species for the state. It is expected that further systematic research will reveal additional and less common species in the study area.

### Conclusion

The horsefly fauna of south-east Herzegovina is made up of 28 species and holds 47.45 % of state's fauna. New species recorded for this region and for the state of Bosnia and Herzegovina are: *Tabanus eggeri*, *Tabanus darimonti* and *Tabanus shannonellus*. It is expected that further research will reveal additional, less common species.

#### Appendix 1

List of horseflies collected in south-east Herzegovina with dates, localities and UTM grids

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