Natura Somogyiensis 44: 67-72. Kaposvár, 2024 https://doi.org/10.24394/NatSom.2024.44.67
Submitted: 27.11, 2024; Accepted: 30.11, 2024; Published: 10.12 2024 www.smmi.hu/termtud/ns/ns.htm

First data on horseflies (Tabanidae) feeding on red deer (*Cervus elaphus*) in Hungary

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Farkas, S. & Berta, B. 2024: *First data on horseflies (Tabanidae) feeding on red deer (Cervus elaphus) in Hungary. - Natura Somogyiensis 44: 67-72.*

Abstract: The relationship between red deer and horseflies has not been studied in Hungary yet. The authors present data on the subject for the first time, which concerns the processing of horsefly material collected on a red deer farm. The studies were conducted in the summer of 2024, over three months (June 1-August 31), in Mike (Somogy county, Hungary). Five red deer (*Cervus elaphus*) were kept on the red deer farm, outdoors, in an area of 15 hectares. H-traps were installed next to the red deer enclosure, operated once a week. During the study, 283 horsefly specimens were collected and identified, and 13 species were explored. The most abundant species were *Haematopota italica, H. pluvialis* and *Tabanus bromius*. The rarest species was *Silvius alpinus*, with only one specimen caught in the traps. There was no difference between the number of specimens collected in the mornings and afternoons. The low number of species and individuals was probably due to climatic reasons and the habitat was not conducive to the reproduction of the horseflies.

Keywords: Diptera, Tabanus, Haematopota, H-trap, Hungary

Introduction

It is common knowledge that horseflies primarily feed on the blood of large mammals. Horseflies also harass farm animals raised by humans, so understandably, innumerable scientific papers have been published about tabanids sucking the blood of horses, cattle, and pigs, which cause financial damage (Majer 1985). The stress caused by the pain, blood loss, or diseases transmitted by these insects all cost a serious amount of money. However, horseflies do not only attack the animals listed above but also feed on wild mammals, such as red deer. Far fewer scientific articles have been published about parasites vexing these animals because studying that is much more difficult and the economic significance is much lower this case. The relationship between red deer and horseflies has not been studied in Hungary yet. Red deer farms make up a small segment of the livestock industry. Here, different species are kept in smaller or larger areas, in closed or almost natural conditions. A small-scale farm with only five red deer operates on the border of the village of Mike in Somogy County. We scrutinised this territory in the summer of 2024 to study the tabanids feeding on red deer (*Cervus elaphus*). We wished to find out what species is the community built up here, learn what species the community comprises, their proportion in the composition of the community, which the dominant species are, and at what time of the year they are most frequent. We were also looking for an answer to the question, of what time of day the harassing activity the strongest was.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Material and methods

The studies were carried out on a red deer farm of a few hectares on the outskirts of the settlement of Mike (Fig.1. and 2.). We operated seven traps, which were placed 25-30 meters apart in a line (Fig. 3.). Sampling was carried out in the summer of 2024, between June 1 and August 30. Sampling happened once a week usually on Sundays. The so-called H-traps were used for the collection, (this is a type of canopy-trap). The H-trap consists of a black shiny attracting ball, a deflector, and a collecting killing glass attached to the top of it (Fig. 4.). The glass quickly kills the insects entering it even without chemicals due to the greenhouse effect. The black ball attracts the female horsefly, and after they have unsuccessfully tried to bite the ball, they mostly fly upwards and the deflector baits them to the killing glass. This glass has a wide but narrow entrance, so the flies can easily get in but cannot get out. Inside the glass, they quickly die from the heat and dryness. The collected material was removed twice a day, at noon and in the evening, at dusk. The collected insects were tagged and provided with a label recording the collection data, then placed in an insect box that belonged to the horsefly collection of the Institute of Wildlife Management and Nature Conservation. The horseflies were identified using the key of MAJER (1987) and CHVÁLA et al. (1972). The data were recorded in an MS ACCESS database. A record contained the name of the species, the number of individuals, the date of collection and the number of the trap.

Fig. 1: Mike village in Somogy county

Fig. 2: The red deer farm at the edge of the village

Fig. 3: The red deer enclosure. The placement of the traps are marked by red dots.

Fig. 4: The H-trap

Results and discussion

The Hungarian horsefly fauna is relatively well known. Several studies have dealt with their distribution, which have proven the occurrence of a total of 61 species (MAJER 2001b). We also have a lot of data from southern Transdanubia (MAJER 2001a, TÓTH 2007, 2009). A total of 57 species are known from this regions (TÓTH 2000, 2002, 2003). During the three-month sampling period, our traps collected a total amount of 283 specimens of 13 species of horseflies (Table 1). The rather low number can be explained by several reasons. The area is unsuitable for breeding of the larvae because there is no wet, humid area nearby and water would be needed for their development. Furthermore, the animals that were a food source were few, only five red deers, which was not a great attraction. The summer of 2024 was particularly dry, with hardly any rain during July and August, which is also adverse for horseflies. Most of the species are common in Hungary, rare specialists were not present due to the unsuitable habitat. There were no species that fed exclusively or mainly on red deer. All species were previously found during collections near horses, cattle or sheep. The temporal distribution of the horseflies during the collection was in accordance with the literature data. All appeared during their known swarming season. Their quantitative distribution was somewhat distorted due to the extremely hot and dry weather. In July and August, much fewer specimens were found than expected. Horseflies occur in the same proportion in the morning and afternoon, both in terms of total numbers and in the case of mass species. Most specimens were collected by our traps from the species *Haematopota italica*. This species is common and frequent in Hungary, in places mass. It regularly occurs with the other species collected in the largest mass, *Haematopota pluvialis*. The latter has a characteristic fea-

ture that it becomes extremely aggressive when a cold front breaks in, before rain. Finally, the 3rd most abundant species was *Tabanus bromius*, a Palearctic fauna element and one of the most common horsefly species in Hungary. There was no significant difference between the numbers of this species collected in the morning and afternoon. The rarest species was *Silvius alpinus*, with only one specimen caught in the traps.

Table 1: List of collected species

1.	*Atylotus loewianus* Villeneuve, 1920
2.	*Chrysops viduatus* (Fabricius 1794)
3.	*Haematopota italica* Meigen, 1804
4.	*Haematopota pluvialis* Linnaeus, 1758
5.	*Hybomitra bimaculata* Macquart, 1826
6.	*Hybomitra ciurei* Séguy, 1937
7.	*Tabanus autumnalis* Linnaeus, 1761
8.	*Tabanus bovinus* Linnaeus, 1758
9.	*Tabanus bromius* Linnaeus, 1758
10.	*Tabanus maculicornis* Macquart, 1826
11.	*Tabanus tergestinus* Egger, 1859
12.	*Tabanus spodopterus* Meigen, 1820
13.	*Silvius alpinus* Scopoli, 1763

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