HYPODERMA DIANA BRAUER, 1858 – NEW TO THE FAUNA OF LITHUANIA (DIPTERA: OESTRIDAE)

ANDRIUS PETRAŠIŪNAS[1], BERND GLIWA[2]

[1]Vilnius University Life Sciences Center, Institute of Biosciences, Department of Zoology, Saulėtekio av. 7, Vilnius, Lithuania. E-mail: Andrius.Petrasiunas@gf.vu.lt
[2]Lithuanian Entomological Society, Akademijos 2, LT-08412 Vilnius, Lithuania.
E-mail: gliwa@sargeliai.org

Introduction

The botflies (Oestridae) are an unnumerous family of medium sized to very large (9-22 mm) flies with rudimentary mouthparts, often resembling bees or bumblebees (Oosterbroek, 2006). The family is currently divided into four subfamilies that were historically treated as separate families – Cuterebrinae, Gasterophilinae, Hypodermatinae and Oestrinae (Pape, 2001). Representatives of all except Cuterebrinae are found in Europe and in Lithuania as well. Adults of the botflies are rarely collected, because they have rather low population density, most species have univoltine life cycles and adults have a short life span (about a week) (Colwell *et al*., 2006). Most of the development cycle, 9–11 months is passed in a larval stage, parasitizing mammals (Danilevičius *et al*., 1966). *Hypoderma diana* Brauer, 1858 mainly parasitizes European roe deer, but contrary to most other botfly species, it has several hosts and is rather plastic in host selection, trying new hosts if a suitable opportunity appears (Pavlásek & Minář, 2014).

There are 22 species of botflies known in Europe (Pape, 2013) and ten of those species, belonging to five genera, are known in Lithuania (Pakalniškis *et al*., 2006; Petrašiūnas & Lutovinovas, 2015). Most of the records, hovewer, are from the fifties and sixties of the last century (Kairiūkštis, 1954; Rauckis, 1958; Danilevičius *et al*., 1966).

Material and Methods

Flies were observed and photographed during the field trips by the junior author of this report (B. Gliwa), a single specimen was collected as a reference and is stored in the entomological collection of the Museum of Zoology of Vilnius University (MZVU), Vilnius. The key of Grunin (1988) was used to identify the specimens. The list of Lithuanian botflies (Oestridae) was compiled from Pakalniškis *et al*. (2006) and Petrašiūnas & Lutovinovas (2015), the taxonomy and general distribution followed Pape (2013).

List of localities

Locality	Administrative district	Coordinates (LAT, LONG)
Papušynys	Raseiniai distr.	55.466291, 23.446683
Sargeliai	Raseiniai distr.	55.477248, 23.456405

Results

***Hypoderma diana* Brauer, 1858**

Papušynys, 06 05 2020, 1 spec.; Sargeliai, 05 05 2020, 1 spec. (Fig. 1), 07 05 2020, 1 spec., 23 05 2020, 2 spec. (1 male in MZVU), 25 05 2020, 1 spec., 26 05 2020, 2 spec. (all B. Gliwa).

Figure 1 (A–B). *Hypoderma diana*, 05 05 2020, Sargeliai (Raseiniai distr.): A – dorsal, B – anterolateral views (photos: B. Gliwa)

Discussion

Hypoderma diana, a representative of Hypodermatinae subfamily, is known from Belgium, Britain, the Czech Republic, France, Germany, Hungary, Poland, Romania, Slovakia, The Netherlands and the Near East (Pape, 2013), is also mentioned as distributed from Kaliningrad region to Crimean mountains, Kazakhstan and Central Asia (Grunin, 1988). Our records expand the known distribution of this species slightly more to the northeast.

The main host of *H. diana* is European roe deer (*Capreolus capreolus*), but is also known to infest the red deer (*Cervus elaphus*), fallow deer (*Dama dama*), Dybowski sika deer (*Cervus nippon dybowskyi*), Eurasian elk (*Alces alces*), rarely also the chamois (*Rupicapra rupicapra*) and the mouflon (*Ovis musimon*) (Pavlásek & Minář, 2014). There are records of *H. diana* attacking horses in the Czech Republic and their larvae were also found in wild boar (Pavlásek & Minář, 2014). It might be that *Hypoderma diana* is naturally spreading northwards, but other ways, such as an introduction with game or livestock animals couldn't be excluded.

It is worth noting that *Hypoderma diana* was observed in Sargeliai for three consecutive weeks almost at the same spot (+/- 10 m). The average temperature during that period was +7.5–12°C. Another species, *H. tarandi* is known to survive in the laboratory up to 17 days at the temperature of +10°C (Colwell *et al*., 2006), suggesting that all specimens of *H. diana* observed in Sargeliai could potentially be from the same host animal, hatched somewhere nearby. Moreover, the mating sites of *H. tarandi*, as well as *H. bovis* and *H. lineatum*, are known to be located at rocky, wind-protected areas along rivers and streams or along paths/trails formed on hillside slopes in valleys (Colwell *et al*.,

2006). This behaviour could also be typical for *H. diana*, because the collection site in Sargeliai was also a slightly higher place at the edge of the forest, facing westward towards the meadow.

Our record increases the number of the botfly species of the Lithuanian fauna to eleven (Pakalniškis *et al*., 2006; Lutovinovas & Petrašiūnas, 2013), but a thorough research is needed to confirm the occurrence of all the listed species. Most of the records are about 60 years old (Kairiūkštis, 1954; Rauckis, 1958; Danilevičius *et al*., 1966), three species are listed only in a textbook with no occurrence data given (Danilevičius *et al*., 1966), leaving some doubts about their actual occurrence in Lithuania.

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***Hypoderma diana* Brauer, 1858 – nauja Lietuvos faunos rūšis (Diptera: Oestridae)**

A. PETRAŠIŪNAS, B. GLIWA

Santrauka

Pateikiami duomenys apie naują Lietuvos faunos gylių (Oestridae) rūšį ir jai priskiriamų individų stebėjimus Raseinių rajone. *Hypoderma diana* paprastai parazituoja stirnas, bet, priešingai nei kitos gylių rūšys, pasižymi plačiu šeimininkų pasirinkimu. Europoje aptiktos parazituojančios įvairias elninių rūšis, muflonus, avis, arklius ir šernus. Rūšis galimai plinta į šiaurės rytus natūraliai plėsdama arealą, bet tikėtinas ir plitimas su atvežtais naminiais gyvūnais ar elniniais žinduoliais.

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