

## First study of fungus gnats (Insecta: Diptera: Sciaroidea) in Tisata Reserve (SW Bulgaria)

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**Abstract.** As a result of the study in "Tisata" Reserve - 2 families, included 18 genera, from which 19 species of fungus gnats were identified. *Coelosia fusca* is a newly recorded species for the fauna of Bulgaria.

**Key words:** fungus gnats, Keroplatidae, Mycetophilidae, Tisata Reserve, \*9560 endemic forests of *Juniperus* spp.

### Introduction

The fungus gnats belong to the families of Bolitophilidae, Diadocidiidae, Ditomyiidae, Keroplatidae and Mycetophilidae, and to the superfamily Sciaroidea (Insecta: Diptera: Nematocera). So far, 318 species of fungus gnats are known from Bulgaria (Bechev 2006, 2010; Bechev & Pavlova 2012, 2016; Kurina & Chandler, 2018; Pavlova & Stojanova (in press)). For the first time a study on fungus gnats is carried on in the "Tisata" Reserve, near Kresna village. Thus far, data about Diptera have been provided by Hubenov (2001) with information about flies in the Kresna Gorge. The old Management Plan of "Tisata" Reserve states that the reserve had not been a subject of a targeted study with respect to any taxonomic group of invertebrates except one study on several families of round worms. After a study for the purpose of the new Management Plan, a total of 339 invertebrate species were identified without mentioning any data for Diptera.

### Material and Methods

The material of the present study was collected during a period of one year (02.12.2018-01.12.2019) The study was carried out in Natura 2000 priority habitat 9560\* endemic forests with *Juniperus* spp. in "Tisata" Reserve, near town of Kresna (146 m, UTM: BG FM72, coordinates N 41.76691; E 23.15095) with all needed permits. The habitat is a sparse Mediterranean forest dominated or bush area dominated by *Juniperus excelsa*. It is included in the Red Data Book of Bulgaria as "Critically Endangered" under the name 39G3 Forests of Grecian juniper (*Juniperus excelsa*). The material was collected using two stationary invertebrate trapping methods – tree and soil traps. Modified Moericke traps were used (Langourov 2001): conical white plastic banks with a base diameter of 65 mm, an opening of 88 mm and height of 118 mm - 10 tree and 10 soil traps with propylene glycol as preservative and 2 control traps with 4% formaldehyde solution. The traps were changed each month. The taxonomic list below follows Bechev (2006, 2010). Information for each species includes: valid taxa name, place and month of collection, type of trap used, number and sex of specimens. The species marked with an asterisk (\*) is a new record for the Bulgarian fauna.

## Results

Faunistic list

Family KEROPLATIDAE  
Subfamily KEROPLATINAE

### ***Pyratula zonata* (Zetterstedt, 1855)**

Material examined: Tisata Reserve, 09.2019, tree traps: 2♂♂, 4♀♀; 10.2019, tree traps: 25♂♂, 27♀♀; 11.2019, tree traps: 1♀

Family MYCETOPHILIDAE  
Subfamily MYCOMYINAE

### ***Mycomya (Mycomya) marginata* (Meigen, 1818)**

Material examined: Tisata Reserve, 11.2019, tree traps: 1♂

### ***Mycomya (Mycomya) prominens* (Lundström, 1913)**

Material examined: Tisata Reserve, 03.2019, tree traps: 2♂♂; 11.2019, tree traps: 1♂

### ***Mycomya sp.* ♀♀**

Material examined: Tisata Reserve, 10.2019, tree traps: 2♀♀; 11.2019, tree traps: 1♀

Note: Female species from *Mycomya* that are not associated with any other male species.

### ***Neoempheria lineola* (Meigen, 1818)**

Material examined: Tisata Reserve, 10.2019, tree traps: 2♂♂; 11.2019, tree traps: 1♂

Subfamily SCIOPHILINAE

### ***Azana (Azana) flavohalterata* Strobl, 1909**

Material examined: Tisata Reserve, 05.2019, tree traps: 1♂, 3♀♀; soil traps: 8♂♂, 11♀♀

Note: Rare species, reported for Bulgaria with single male specimen as *Azana bulgarensis* Coher, 1995. Known distribution is Spain, Bulgaria, Greece, Cyprus and Israel.

Subfamily GNORISTINAE

### ***Boletina gripha* Dziedzicki, 1885**

Material examined: Tisata Reserve, 02.2019, tree traps: 2♂♂, 03.2019, tree traps: 1♂

### ***Boletina sp.* ♀♀**

Material examined: Tisata Reserve, 10.2019, tree traps: 1♂

Note: Female individuals that cannot be associated with any males species.

### **\**Coelosia fusca* Bezzi, 1892**

Material examined: Tisata Reserve, 02.2019, tree traps: 26♂♂, 119♀♀; soil traps: 10♂♂, 22♀♀; 03.2019, tree traps: 7♂♂, 8♀♀; soil traps: 3♂♂, 3♀♀; 11.2019, tree traps: 2♀♀.

Note: **New species for Bulgaria.**

Subfamily LEIINAE

### ***Docosia gilvipes* (Walker, 1856)**

Material examined: Tisata Reserve, 03.2019, tree traps: 2♂♂; 10.2019, tree traps: 5♂♂, 2♀♀

### ***Docosia lastovkai* Chandler, 1994**

Material examined: Tisata Reserve, 03.2019, tree traps: 1♂; 10.2019, tree traps: 1♂; 11.2019, tree traps: 4♂♂, 3♀♀

***Leia bimaculata* (Meigen, 1804)**

Material examined: Tisata Reserve, 03.2019, tree traps: 2♂♂, 1♀; 10.2019, tree traps: 3♂♂, 7♀♀; 11.2019, tree traps: 1♂, 1♀

***Leia winthemi* Lehmann, 1822**

Material examined: Tisata Reserve, 11.2019, tree traps: 1♂

## Subfamily MYCETOPHILINAE

## Tribe EXECHIINI

***Brevicornu fissicauda* (Lundström, 1911)**

Material examined: Tisata Reserve, 02.2019, tree traps: 1♂♂

***Brevicornu* sp. ♀♀**

Material examined: Tisata Reserve, 03.2019, soil traps: 1♀; 05.2019, soil traps: 1♀

Note: Female individuals that cannot be associated with any males species.

***Cordyla fissa* Edwards, 1925**

Material examined: Tisata Reserve, 03.2019, tree traps: 1♂

***Cordyla nitidula* Edwards, 1925**

Material examined: Tisata Reserve, 05.2019, soil traps: 3♂♂

***Exechia fusca* (Meigen, 1804)**

Material examined: Tisata Reserve, 11.2019, tree traps: 1♂, 2♀

***Stigmatomeria crassicornis* (Stannius, 1931)**

Material examined: Tisata Reserve, 02.2019, soil traps: 1♀

***Synplasta* sp. ♀♀**

Material examined: Tisata reserve, 12.2018, tree traps: 1♀

Note: Female individual that cannot be associated with any males species.

***Tarnania nemoralis* (Edwards, 1941)**

Material examined: Tisata Reserve, 12.2018, tree traps: 1♂

## Tribe MYCETOPHILINI

***Mycetophila ruficollis* group**

Material examined: Tisata Reserve, 11.2019, tree traps: 1♂

Note: *Mycetophila ruficollis* group after Jürgenstein et al., 2015

***Phronia biarcuata* (Becker, 1908)**

Material examined: Tisata Reserve, 11.2019, tree traps: 1♂, 1♀

***Trichonta clavigera* Lundstrom, 1913**

Material examined: Tisata Reserve, 12.2018, tree traps: 4♂♂, 1♀

**Discussion**

After our study there are 2 families, 18 genera and 19 species of fungus gnats known to the endemic *Juniperus* sp. forests which are a habitat of priority for the Natura 2000 project. *Coelosia fusca* is a new record for the fauna of Bulgaria. Palaearctic species, known from the Mediterranean (Chandler & Ribeiro 1995), Israel (Chandler 1994) and (Montenegro

(Kolscar & Salmela (2017). The information is valuable not only in terms of completing data on the fauna of Bulgaria, but contributes to the planning of conservation measures in the reserve and the priority Natura 2000 habitat Kresna - Ilindentsi BG0000366.

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