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## CONTRIBUTION TO THE KNOWLEDGE OF HOVERFLIES (DIPTERA: SYRPHIDAE) OF MACEDONIA

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**Abstract** - Analysis of materials from the Republic of Macedonia shows the presence of 13 species of hoverflies, registered for the first time: *Cheilosia antiqua*, *Cheilosia orthotricha*, *Cheilosia rhynchops*, *Chrysotoxum fasciolatum*, *Chrysotoxum verralli*, *Merodon alexeji*, *Merodon recurvus*, *Merodon rufus*, *Myolepta potens*, *Neoascia annexa*, *Neoascia obliqua*, *Neoascia unifasciata* and *Sphegina sublatifrons*.

**KEY WORDS:** Diptera, Syrphidae, fauna, Macedonia.

**Izveleček** – PRISPEVEK K POZNAVANJU MUH TREPETAVK (DIPTERA: SYRPHIDAE) MAKEDONIJE

Med muhami trepetavkami, zbranimi v Makedoniji, smo ugotovili 13 vrst, ki so prvič zabeležene v državi: *Cheilosia antiqua*, *Cheilosia orthotricha*, *Cheilosia rhynchops*, *Chrysotoxum fasciolatum*, *Chrysotoxum verralli*, *Merodon alexeji*, *Merodon recurvus*, *Merodon rufus*, *Myolepta potens*, *Neoascia annexa*, *Neoascia obliqua*, *Neoascia unifasciata* in *Sphegina sublatifrons*.

**KLJUČNE BESEDE:** Diptera, Syrphidae, favna, Makedonija.

## Introduction

Syrphids are a relatively well known group of insects in Macedonia. Glumac (1968) gave the first comprehensive data. He published the list of 188 species that were collected in the whole territory of Macedonia. Later, this list was supplemented with 18 additional species (Vujić, 1995). The latest comprehensive data were given by Krpač & Ivanovski (1996) and Krpač (1997). They published a list of 3 additional species.

## Material and methods

This paper presents the results of our investigations that included a re-determination of the Glumac collection preserved in the Macedonian Museum of Natural History. Standard methods were used during this research. The material is deposited in the collection of the Macedonian Museum of Natural History. The distribution data follow Speight (1998), Peck (1988), Vujić (1990, 1996) and Vujić & Claussen (1994).

## Results and discussion

In the past 30 years 209 species were recorded in the fauna of hoverflies in Macedonia. The results of our additional investigations included re-determination of the Glumac collection preserved in the Macedonian Museum of Natural History and the Institute of Biology in Novi Sad where they were analyzed. This paper presents data on 13 species of 6 genera of hoverflies which are new to the fauna of Macedonia. The list below presents the general distribution of each species and its distribution in Macedonia, their visit flowers and flight period.

### List of species:

#### *Cheilosia antiqua* (Meigen, 1822)

General distribution: Europe: Ireland through to central Europe and southern Europe (former Yugoslavia) and into European parts of Russia. Apparently not recorded from further north than Denmark and not known from the Pyrenees, though recorded from Spain.

Distribution in Macedonia: Krčin Planina, 25. 5. 1995, 1♀, leg. V. Krpač; Mavrovo, Nikiforovo, 23. 5. 1995, 3♀, leg. V. Krpač; Galičnik, 24. 5. 1995, 2♂, leg. V. Krpač. 500-1900 m above sea level.

Flowers visited: *Ranunculus*, *Caltha palustris*, *Primula elatior*.

Flight period: April - June.

***Cheilosia orthotricha* Vujić & Claussen, 1994**

General distribution: Central Europe: Belgium through Germany, Switzerland, Czech Republic, Slovakia and Hungary to Croatia, Bosnia and Serbia.

Distribution in Macedonia: Kičevo, S. Cer, 7. 4. 1982, 1♂, leg. Čingovski.

Flowers visited: *Ranunculus*, *Cotinus*, *Petasytes*, *Salix*, *Taraxacum*.

Flight period: February - July.

***Cheilosia rhynchops* De Geer, 1860**

General distribution: Central Europe (high mountains). Balkan Peninsula: Slovenia, Croatia, Bosna and Herzegovina, Montenegro, Serbia, Bolgaria, Greece.

Distribution in Macedonia: Mavrovo, Nikiforovo, 23. 5. 1995, 1♂, leg. V Krpač. 1300 m above sea level.

Flowers visited: *Myosotis sylvatica*, *Caltha palustris*, *Ranunculus*.

Flight period: May - July.

***Chrysotoxum fasciolatum* (De Geer, 1776)**

General distribution: Europe: Fennoscandia, mountain ranges in Poland and Germany south to France (e.g. Vosges, Massif Central); and eastwards through northern Europe (Baltic States, Russia) into Siberia and on to the Pacific and Japan; from the Vosges eastwards through the Alps including northern Italy and parts of the former Yugoslavia and on to Bulgaria, the Ukraine and the Caucasus.

Distribution in Macedonia: Popova Šapka, 1. 5. 1958, 1♀, leg. S. Joksimović; Mavrovo, 6. 6. 1996, 3♂, leg. V Krpač. 1300-2000 m above sea level.

Flowers visited: Compositae.

Flight period: May - August.

***Chrysotoxum verralli* Collin, 1940**

General distribution: Europe: Denmark south to central France; Britain (Wales and central/southern England) eastwards through central Europe into European parts of Russia to the Caucasus and into eastern Siberia.

Distribution in Macedonia: Radika: s. Rostuše, 31. 5. 1960, 1♀, leg. S. Glumac; Struga: s. Kažani, 3. 6. 1960, 1♀, leg. S. Glumac. 300-700 m above sea level.

Found on damp meadows, on the leaves of plants: *Lepson*, *Chrisanthemum*, *Euphorbia*, *Hieraceum*; larvae in ants nests.

Flight period: June - September.

***Merodon alexeji* Paramonov, 1925**

General distribution: Ukraine, Altai, Tuva, Syan, Mediterranean part of Europe (France, Spain, Italy and Greece).

Distribution in Macedonia: Skopje, Kula, 6. 6. 1996, 1♂, leg. V Krpač. 1000 m above sea level.

Flowers visited: *Ranunculus*.

Flight period: May - July.

***Merodon recurvus* Strobl, 1898**

General distribution: Europe: France, Yugoslavia, Romania.

Distribution in Macedonia: Bistra: Carevec, 26. 6. 1991, 1♂, leg. V. Krpač. 1550 m above sea level.

Flowers visited: *Ornithogalum*.

Flight period: July.

***Merodon rufus* Meigen, 1838**

General distribution: Europe: from the Netherlands south to the Pyrenees, the Mediterranean and N Africa; through central and southern Europe into European parts of Russia and on to Kazakhstan.

Distribution in Macedonia: Skopje, Kula, 6. 6. 1996, 3♂, 1♀, leg. V. Krpač. 500-1400 m above sea level.

Flowers visited: Umbeliferae.

Flight period: end of May - end of July.

***Myolepta potens* (Harris, 1780)**

General distribution: Europe: imperfectly known. Britain (southern England) through France south to the Mediterranean and in Germany (Rhine valley), Hungary, Yugoslavia, Romania, Turkey and the Transcaucasus.

Distribution in Macedonia: Oteševo, 24. 6. 1956, 1♀, 15. 6. 1959, 1♀, 2. 6. 1960, 6♂, 1♀, leg. S. Glumac; Nevičanska Reka, 7. 6. 1960, 1♂, leg. S. Glumac; Ogražden, 7. 6. 1960, 4♂, 1♀, leg. S. Glumac; Bregalnica, 8. 6. 1960, 1♀, leg. S. Glumac. 500-1400 m above sea level.

Flowers visited: yellow Umbeliferae.

Flight period: May - June.

***Neoascia annexa* (Müller, 1776)**

General distribution: Europe: from southern Sweden south to the Pyrenees and northern Spain; from Belgium eastwards through mountainous parts of central and Southern Europe (Italy, Yugoslavia) into European parts of Russia and on to the Caucasus.

Distribution in Macedonia: Dubrava, 21. 5. 1960, 1♀, leg. S. Glumac, Radika, Lukovo, 25. 5. 1995, 1♀, leg. V. Krpač; Radika, s. Nistrovo, 6. 6. 1996, 2♂, leg. V. Krpač, Mavrovo, 6. 6. 1996, 1♂, leg. V. Krpač. 400–2000 m above sea level.

Flowers visited in mixed forest (*Fagus, Picea*): Umbeliferae, *Adenostylis, Tussilago, Petasites*.

Flight period: May - August.

***Neoascia obliqua* Coe, 1940**

General distribution: Europe: from southern Sweden south to the Pyrenees; from Ireland eastwards through central Europe to European parts of Russia; the former Yugoslavia.

Distribution in Macedonia: Radika: Lukovo Pole, 25. 5. 1995, 3♂, 1♀ and 10. 5. 1996, 3♂, 2♀, leg. V. Krpač; Radika, s. Nistrovo, 6. 6. 1996, 1♂, 6♀, leg. V. Krpač. 400-2000 m above sea level.

Flowers visited: *Petasytes*.

Flight period: April - September.

### ***Neoascia unifasciata* (Strobl, 1898)**

General distribution: Europe: known at present from Germany, the Netherlands, Belgium, Switzerland, Austria, Slovenia and Yugoslavia.

Distribution in Macedonia: Radika, Lukovo, 10. 5. 1996, 1♂, leg. V. Krpač. 2000 m above sea level.

Flowers visited: white Umbeliferae, *Euphorbia cyparissias*, *Stellaria*.

Flight period: May - August.

### ***Sphegina sublatifrons* Vujić, 1990**

General distribution: Europe: Yugoslavia (Endemic) (Balkan Peninsula: Serbia: Kopaonik, Stara Planina, Šar-planina).

Distribution in Macedonia: Mavrovo, 6. 6. 1996, 1♂, leg. V. Krpač, 1300 m above sea level.

Flowers visited: *Caltha*.

Flight period: May - July.

## **Conclusion**

With the investigations and revision of the Museum Collections of Syrphidae (Diptera) of the Republic of Macedonia, 13 species of 6 genera were determined which till now were not registered in Macedonia. With this, the fauna of hoverflies in the Republic of Macedonia numbers 222 species.

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