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Review on Hoverflies (Diptera, Syrphidae) fauna in Sharr Mountains

Vladimir Krpač

University of Tetova, Institute of Ecology and Technology, Popova Šapka, Republic of North Macedonia
e-mail of corresponding author: vkrpach@gmail.com

Abstract

The total number of known two-winged flies (Diptera) in Macedonia amounts to 606 taxa. This order flies in Sharr Mountains are represented with 15 families and 197 species. Some of them are studied in detail, whilst some only partially. Detailed analyses are made on the family Hoverflies – Syrphidae with 130 species. Second place in number are the representatives from the family mosquitos - Tipulidae with 42 species; Cecidomyiidae with 24 taxa; Simuliidae with 11 spesies; Chironomidae 10 spesies; Empididae 8 species; Tabanidae 7 species; Limoniidae and *Blephariceridae* with 4 species; Muscidae 3 species; Chloropidae and Pediciidae with 2 species; Calliphoridae, Lauxaniidae, and Limnobiidae with 1 species.

Key words: *fauna, diptera, Syrphidae, endemic, Sharr Mountains*

Introduction

Within Sharr Mountains, taxonomic groups of Diptera (two-winged flies) are investigated in variable intensity. Essential is the fact that a huge number of known scientists who have researched Macedonian fauna have failed to investigate the area of Sharr Mountains. Their failure to be absent from it was probably due to incisiveness of terrain, bad communication links (undeveloped roads at that time) failed to allow the performance of wide range researchers. Therefore, studies are noted to be partial, with modest data on some diptera taxonomic categories.

Besides previous literature data, this report contains results and knowledge of our recent investigations on Diptera fauna in the Sharr Mountains.

Material and methods

The research of hoverflies fauna on Sharr Mountains was conducted by continuous seasonal collection from 2017 to 2020. In that period were realized numerous field tours of various localities, which are listed in all the identified species. During the research, were also considered the available data from the reviewed collections of hoverflies in the Department of Biology and Ecology - Novi Sad (IBSN) and the data from the collection of the Natural History Museum of Macedonia - Skopje (SKO). About 1.500 examples from the territory of the Sharr Mountains were determined and audited.
Insects were collected by entomological net (catcher).

Laboratory processing of materials (preparation and labeling) was performed by standard methods. In some species have been made permanent preparations of genital apparatus of males by a standard procedure, because only based on differences in their structure, possible is their precise identification.

The determination was performed using different standard keys for this family of insects: Barkalov and Ståhls (1997), Coe (1953), Sack (1928-32), Stubs and Falk (1983). By revising individual genera of surfides, it was performed using the publications Claussen and Doczkal (1998); Doczkal (2000); Dusek and Laska (1973); Goeldlin (1989, 1991); Šimic (1987); Verlinden (1999); Vujić (1994, 1995, 1997, 1999a); Vujić and Claussen (1994, 2000). Systematics and taxonomy of hoverflies were derived according to Speight (2001), from which was taken the range of species. The systematics is also harmonized with the checklist of Germany, Schumann et al (1999).

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Area of investigation

Sharr Mountains is a vast alpine massif that stretches in the northwestern part of the Republic of Macedonia and the territory of southern Kosovo. Within its widest natural borders (as an array, with all branches) it covers an area of 2480 km2, of which 881 km2 or 35.5% in the Republic of Macedonia. Within narrower limits, the main area is 1670 km2, of which 840 km2 or exactly half belongs to the Republic of Macedonia (Fig. 1).

This high crystalline massif of western Macedonia is dominated by Paleozoic metamorphic rocks (shales). About 11% of the soil is composed of carbonate carps with varying degrees of karstification. In addition to slates, granitoid carps can also be found (Milevski and Temovski, 2018).

The southern alpine type of vegetation is mainly mountainous and subalpine (generally below 1000 m above sea level) and is much less represented in the area of Sharr Mountains.

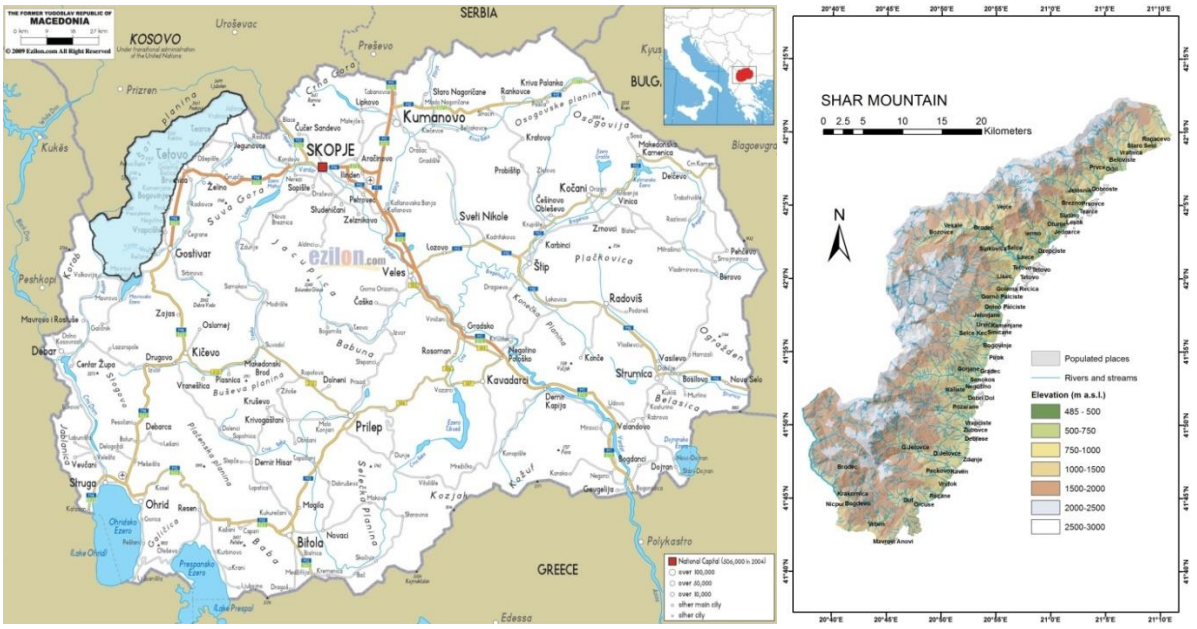


Figure 1. Area of investigation (left: Republic of North Macedonia and right: Sharr Mountains)

Results and discussion

The family hoverflies - Syrphidae is poorly researched in Sharr Mountains. The first comprehensive data is published by Glumac (1968). Then Šimić (1982), Vujić (1990b, 1994, 1995, 1996, 1997), Vujić and Claussen, 1994), Vujić and Šimić (1998a), Nielsen (2004), Krpač et al (2001a, 2001b, 2009a, 2009b), Krpač (2006) and Krpač et al (2006).

The review is the result of comprehensive research on specific flies in the Sharr Mountains. The list of species on Sharr Mountains is based on the review collections of Macedonian Museum of Natural History - Skopje (SKO), Department of Biology and Ecology - Novi Sad (IBNS), the revival of all literary data discussed on hoverflies from the territory of Sharr Mountains, as well as our research. The family hoverflies (Diptera: Syrphidae) on Sharr Mountains is registered with 131 species, belonging to 32 genera, which is 50% of the total number of known species in North Macedonia (262), Krpač (2006). Three taxa hoverfly (Diptera, Syrphidae) are Balkan endemics: *Cheilosia melanura* Becker, 1894 ssp. *rubra*; *Sphegina sublatifrons* Vujić, 1990 and *Cheilosia frontalis* Loew, 1857.

List of species

Fam. Syrphidae Latreille, 1802

Genus *Baccha* Fabricius, 1805

Many species of this genus are characteristic for Eastern Palearctic (Siberia, Japan), while in Europe it is represented by two species, *Baccha elongata* (Fabricius, 1775) and *B. obscuripennis* Meigen, 1822. Peck (1988) indicates the presence of third species in Europe, *B. strandi* Duda, 1940, treated as species belonging to genus *Melanostoma* (Doczkal, 1998b). According to some authors, *B. obscuripennis* is an earlier synonym for *B. elongata*. Van der Goot (1981) separated these species into two separate ones. The presence of both species has been confirmed in Macedonia, and 1 species on Sharr Mountains. Adults of the genus *Baccha* live in forest ecosystems. They prefer dark places (shadows) and wet habitats. The larvae feed on aphids. Only the species *B. elongata* is present on the Sharr Mountain.

1. ***Baccha elongata* (Fabricius, 1775)**

Habitat type: in forest biotopes of deciduous and coniferous forests.

Adult: Adults fly under the canopy of trees at a height of 1-3 m, or in the thickets of wooded areas, in the river's valleys and mountain streams, as well as in the hedges of suburban gardens. They rarely move away in open places.

Host plant: Compositae; Rosaceae; Umbelliferae; *Hedera* sp. and others.

Flight period: April / June and July / September or October.

Larva: The larva and puppet were described by Dusek and Laska (1960a) and Goeldlin (1974). It feeds on aphids from tall plants (such as burdock - *Circium*), from shrubs and trees (Speight, 2001).

Distribution: From Scandinavia to the Mediterranean; from central Spain in the east to Greece and from Ireland in the east to the European part of Russia. This species is also known for the Azure Islands (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings, Glumac, 1968: 876.
Material: 8 specimens (7♂, 1♀).
Verified literature data: (Glumac, 1968): Mavrovi Anovi, the valley of a mountain stream, on flowers, 1♂, May 30, 1960, (leg. Glumac); valley of the river Radika, 6♂, 1♀, May 31, 1960, (leg. Glumac), SKO.
Comment: This species has been recorded in all countries of the Balkan Peninsula. For Macedonia, Glumac (1968) states that it is a rare species. It is found in the canyon of the river Radika and the valley of mountain streams, in several localities, but a smaller number of specimens.

Genus *Brachypalpoides* Hippa, 1978

This genus was first established by Hippa (1978). Earlier, many authors classified this genus as *Chalcosyrphus* or *Xylota* (synonymous of *Zelima*). Hippa (1985) places it in a separate genus. In Europe, *Brachypalpoides* are represented by only one species of *B. lentus* (Meigen, 1822). Other species are characteristic of the eastern part of Palearctic. The presence of the only known species for Europe, *Brachypalpoides lentus*, has been confirmed in Macedonia and the Sharr Mountains. Larvae of this genus develop in decaying wood masses (rotten stumps).

2. *Brachypalpoides lentus* (Meigen, 1822)
Zelima lenta Meigen, 1822 in Glumac, 1968

Habitat type: old dense forests of *Fagus*, *Picea*, and *Quercus*.
Adult: Adults fly very fast between the leaves of the *Rubus fruticosus* bush. They are registered on the clearing next to the forest and the ground next to the fallen trees.
Host plant: *Umbelliferae*, *Crataegus*, *Galium*, *Rubus ideus*, *Sorbus aucuparia*, *Ranunculus* sp., *Orlaya grandiflora*.
Flight period: April / June and July in places with higher altitudes.
Larva: not described; but it was collected from the damp, rotten, mushroom-covered tree of old *Fagus*. Rotheray (1994), separated larva of this species from the larvae of related genera graphically present the characteristics of the body. The larva *B. lentus* was also found by Kassebeer (1993) under the bark of *Picea* (Speight, 2001).
Distribution: From Scandinavia to the Pyrenees and central Spain; from Ireland through Central Europe and the European part of Russia; in southern Europe, covering parts of the former Yugoslavia, Greece; and in Asia Minor. (Speight, 2001).
Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.
Macedonia: Published findings, as *Z. lenta* in Glumac (1968: 851).
Material: 7 specimens (5♂, 2♀).
Verified literature data: as *Z. lenta* in Glumac (1968): Tetovo, Vata Bogunović, meadow, on a flower *Ranunculus* sp., 2♂, 07.06.1959, (leg. Glumac) SKO.
Comment: Glumac (1968) mentions *B. lentus* for Macedonia as known but rare species. It is found in different types of forests, especially beech forests.

Genus *Caliprobola* Rondani, 1845

Only one species of the genus *Caliprobola* is known in Europe, and it has been found in Macedonia and Sharr Mountains. There is another species of *C. aurea* (Sack, 1910) that is known only from the Caucasus in Georgia. Larvae of this genus develop in rotten wood mass (in rotten stumps, trees, and tree roots).

3. *Caliprobola speciosa* (Rossi, 1790)

Habitat type: deciduous forests with old trees *Castanea*, *Fagus*, *Quercus pedunculata*.

Adult: Adults of males' hover in places exposed to the sun, near the roots of old *Castanea*, *Fagus*, or Quercus. They can be found on bare ground, on trine cut stumps, or nearby vegetation - *Pteridium*.
Host plant: Both sexes visit the flowers of small trees and low plants. They can also be found outside the woods. They feed on nectar from the flowers of plants that grow on river gravel or in nearby fields, along the banks of large rivers overgrown with forests of *Salix alba*, *Populus*, *Fraxinus*, *Carpinus*, and *Quercus*. They have also been observed on the flowers of *Heracleum sphondylium*. This species uses river biotopes as a passageway between forests.

Flight period: May / mid-July, fly end the masse in early June.

Larva: It develops in the moist and rotten roots of the stumps of *Fagus* and *Quercus*. It is described and graphically depicted by Rotheray (1991). The larvae were collected by other authors, also from the cavities of stumps, roots, and rotten trees of *Fagus* and *Quercus*. Rotheray (1994) in his key separated this larva from larvae of related genera (Speight, 2001).

Distribution: From Denmark and Poland in the south to the Pyrenees and northern Spain; from Britain (southern England) in the east to central Europe (northern Italy and the northern parts of the former Yugoslavia), Turkey and the European part of Russia (Speight, 2001).

Balkan Peninsula: Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.
Macedonia: Published findings (Glumac, 1968: 853).

Material: 3 specimens (1♂).

Verified literature data: (Glumac, 1968): Azajnica, next to the river, meadow, on the flower of *Heracleum sphondylium*, 1♂, June 10, 1959, (leg. et det. Glumac) SKO.

Comment: According to Glumac (1968), this species, despite being widespread in the central Palearctic, is rare in Macedonia and registered in only a few localities.

Genus *Callicera* Panzer, 1809

This genus is represented in Europe with 6 species (Speight, 1991b). Two species have been identified in Macedonia: *C. aurata* (Rossi, 1790) and *C. fagesii* Guerin-Meneville, 1844. One species has been registered in the Sharr Mountains. Larvae of this genus develop in the cavities of rotten and old trees. The Rotheray and Perry key (1994) can be used to distinguish larvae of related species.

4. *Callicera fagesii* Guerin-Meneville, 1844
sub. *Callicera rufa* Schummel, 1842 in Glumac, 1968

Habitat type: Deciduous forests with old *Fagus* / *Quercus* trees.
Adult: Adults float in the treetops, descend to feed on flower nectar, or hover under treetops and visit the banks of streams. In the spring, adults can be seen sunbathing on the leaves of deciduous plants, including tall plants such as *Heracleum* sp.
Host plant: *Sorbus aria*.
Flying period: The beginning of April / end of June, and females extend in mid-July.
Larva: unknown; its connection to the landscape *Alnus*, *Fraxinus*, *Populus*, or *Salix* is possible. Females have been seen laying eggs in large *Populus* trees in damaged areas (Speight, 2001).

Distribution: Netherlands, Belgium, France (Paris Basin in the south to the Mediterranean, including the Pyrenees); Spain (Cadiz); Turkey; Sardinia; Italy, former Yugoslavia, and Turkmenistan (Zimina, 1986).
Balkan Peninsula: Data on the distribution of the species in the Balkan Peninsula has been revised. Šimić et al, 2001 lists specimens from Montenegro that were designated as *Callicera* sp., and refer to this species (data not published); in Glumac (1968: 860) specimens from Macedonia are listed, which are determined as *C. rufa*, they have been revised and refer to *C. fagesii*. The only unverified data is with Peck (1988: 126) and it refers to specimens from Bulgaria.
Macedonia: The species was first registered in Macedonia in Krpach et all (2006).
Material: 1 specimen (1♂).
Incorrect literature data: sub. *C. rufa* in Glumac (1968: 860).
Published findingsing: (Krpach et al, 2006), r. Radika, 1♂, August 29, 1961, (leg. Glumac), SKO.
Comment: This species is very close to the species *C. rufa* and *C. macquarti* with which confusion is most often created. It is a very rare species on the Balkan Peninsula (Vujić, oral statement).

Genus *Ceriana* Rafinesque, 1815

This genus in Europe is represented by two species, which can be easily separated using the key of Séguy (1961). Only one species of *C. conopsoides* (Linnaeus, 1758) has been registered in Macedonia and the Sharr Mountains. Larvae of the genus *Ceriana* develop in plant matter that rots. Species of this genus are saproxyl insects and are on the endangered list in Europe (Speight, 1989).

5. ***Ceriana conopsoides* (Linnaeus, 1758)**
   Cerioides conopoides Linnaeus, 1758 in Glumac, 1968

Habitat type: Old deciduous forests *Fagus* / *Quercus*.

Adult: Adults fly fast and at altitudes up to 3m. They live in a bush by the trail.

Host plant: *Umbelliferae*; *Dianthus*, *Euonymus*, *Euphorbia*, *Physocarpus*, *Rubus fruticosus*, *Heracleum sphondylium*, *Sorbus aucuparia*, *Euphorbia* sp., *Orlaya* sp. and *Pastinaca sativa*.

Flight period: From May to September, most massively in June / July.

Larva: Develops in the moist cavities of the *Populus* and *Ulmus* trees.

Habitat: The species extends from southern Finland to the Mediterranean and northern Africa. From eastern France through central Europe and Asian parts of Russia all the way to the Pacific and China. It is less common and in smaller numbers in Western Europe (Speight, 2001).

Balkan Peninsula: Croatia, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Glumac, 1968: 859).

Material: 3 specimens (2♂, 1♀).

Verified literature data: as *C. conopoides* in Glumac (1968): Azajnica, near the river Radika, wet meadow on *Heracleum sphondylium*, 1♂, 10.06.1959, (leg. Glumac); Tetovo, v. Vratnica, 1♀, July 21, 1971, (leg. Čingovski); Tetovo, v. Vratnica, 1♂, July 26, 1971, (leg. Čingovski), SKO.

Comment: The species *C. conopoides* on the Sharr Mountains was collected from a few localities and in individual specimens. Therefore, the literature states that this is a rare and small numbering species, in which there is increased resistance of the environment during its larval development (Glumac, 1962).

Genus ***Cheilosia*** **Meigen, 1822**

According to Peck (1988), *Cheilosia* is one of the richer species among syrphids. However, the taxonomy of the European species of *Cheilosia* is full of ambiguities, errors, and nomenclature anarchy. Various authors describe new species without having previously studied the type of material of existing ones well or established the limits of intraspecific variability. Then, in most cases, the descriptions they gave for their "new species" are completely inadequate and only serve to add other suspicious taxa to the existing confusion. Efforts have been made for a long time to stabilize the *Cheilosia* nomenclature by dividing it into small groups of closely related species. However, there is still no key based on which all European species could be identified. 175 species have been registered in Europe. The number of taxa in Macedonia is 42, and 29 in Sharr Mountains. Some authors (Barkalov and Ståhls, 1997; Vujić, 1996) in their publications single out some species of this genus into a separate genus *Nigrocheilosia*. This grouping has not been accepted in other literature units (Speight, 2001). Larvae of this genus develop in plant tissues and the basidiocarps of fungi. Adults of the genus, have a high degree of species in the diet (attachment to certain host plants), which has led to the appearance of a high degree of diversity.

6. ***Cheilosia aerea*** **Dufour, 1848**
syn. *Cheilosia zetterstedti* Becker, 1894 in Glumac, 1968

Habitat type: Forests and open spaces; mesophilic and thermophilic deciduous forests of *Fagus* and *Quercus*; dry lawns and dry shrubs.

Adult: Adults are found in open spaces and forest clearings or meadows along forest edges, in thickets and dry grasslands; they rest on the leaves of trees and shrubs as well as on the vegetation of low-lying forests. Males hover at a height of 4m, in sunny places in the forest

Host plant: *Antennaria*, *Dryas*, *Hieracium*, *Ranunculus*, *Taraxacum*, *Euphorbia helioscopia*, *Prunus* sp., *Lapsona* sp., *Chrysanthemum* sp.

Flight period: May / July.

Larva: Not described, but Doczkal (1996b) reports specimens collected with *Verbascum nigrum* and females observed to lay eggs on *V. densiflorum*.

Distribution: Poland south to the Mediterranean; from the Netherlands east through most of Central and Southern Europe to the European part of Russia (Transcaucasia) (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Glumac, 1968: 866); (Vujić, 1996: 66-67).

Material: 38 specimens (22♂, 16♀) SKO.

Verified literature data: as *C. zetterstedti* in Glumac (1968); (Vujić, 1996): Mavrovi Anovi; Tetovo, v. Vratnica, 1♂, July 21, 1971, (leg. Čingovski);

New findings: Mavrovi Anovi, 1♂,May 20, 2015, (leg. Krpač); Mavrovi Anovi, 4♂, 2♀, May 17, 2016. (leg. Krpač).

Comment: According to Vujić (1996: 66-67), all data on the species *C. zetterstedti* from localities on the territory of Macedonia cited by Glumac (1968: 866), refer to *C. aerea*. In the existing keys *C. aerea* is inadequately separated from the species *C. proxima*. In *C. aerea*, the postero-dorsal edge of the flat part of the mesoepisternite 1 is hairy, and in other species of the proxima group it is bare. This species is known in recent literature as *C. zetterstedti* Becker, but Claussen and Thompson (1996) found that *C. zetterstedti* is a younger synonym for *C. aerea* (Speight, 2001).

7. *Cheilosia albipila* (Meigen, 1838)

Habitat type: Ponds and forests of *Alnus* and *Salix*; open spaces and paths in moist coniferous and deciduous forests, up to the height of the *Larix* forest.

Adult: Adults fly along forest paths, on clearings, and along forest edges. Male hover next to the bushes at a height of 1-3m.

Host plant: *Betula*, *Caltha*, *Cardamine*, *Corylus*, *Prunus spinosa*, *Ribes uva crispa*, *Salix*, *Taraxacum*, *Tussilago*, *Vaccinium*.

Flight period: End of March / end of May.

Larva: Larvae were described and graphically depicted by Rotheray (1988); they live on the pastures of *Cirsium palustra*, where they destroy (mine) the stems of *Cirsium palustra* and *Carduus*. The species overwinters as a puppet (Speight, 2001).

Distribution: Southern Finland and the Scandinavian peninsula south to the Pyrenees; Ireland, in the east through parts of northern and central Europe; European part of Russia and central Siberia.
Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Vujić, 1996: 67-68).

Material: 1 specimen (1♂).

Verified literature data: (Vujić, 1996): Sharr Mountains, Crn Kamen, 1♂, April 19, 1987, IBNS.
Comment: *C. albipila* shows the highest abundance in early spring in oak and beech forests. Populations are declining at higher altitudes.

8. *Cheilosia albitarsis* (Meigen,1822) sensu Doczkal, 2000

Habitat type: Open spaces and forests, fields, forest clearings, mountain, and alpine pastures.
Adult: Adults can be found along the edges of forest clearings and along trails in fields and pastures. Males fly at a height of up to 5 m, living on the leaves of shrubs and low-growing plants.
Host plant: Umbelliferae, Compositae, *Ajuga*, *Allium ursinum*, *Caltha*, *Crataegus*, *Matricaria*, *Potentilla*, *Sorbus*, *Stellaria*, *Verbascum* sp., *Ranunculus illiacus*, *Euphorbia helioscopia*.

Flight period: April / June, and at higher altitudes in July.

Larva: A description of the larvae and a graphical representation are given by Rotheray (1991). Larvae are found in the rhizomes of *Ranunculus* (probably *R. repens*) (Speight, 2001).

Distribution: Palearctic, including North Africa; far north and north America.

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Glumac, 1968: 863).

Material: 24 specimens (10♂, 14♀).

Verified literature data: (Glumac, 1968): Tetovo, Staro Selo; Sharr Mountains; the valley of the river Radika; Tetovo.

New founding: Vata Bogunović and r. Radika, Pilana, 1♂, May 25, 1995, (leg Krpač), 10♂ and 14♀ specimens were collected from these localities, SKO.

Comment: There is a lot of data from several localities in Macedonia. The species are registered in different habitats and at different altitudes.

9. *Cheilosia antiqua* (Meigen, 1822)
Nigrocheilosia antiqua (Meigen, 1822) in Vujić, 1996

Habitat type: Open habitats and deciduous forests; uncultivated mountain and alpine pastures.

Adult: Adults are found in forest clearings, along trails and bushes, and in open mountain pastures. They fly low, resting on low-growing plants and shrubs. Males also fly at altitudes up to 4m.

Host plant: *Caltha*, *Cardaminae*, *Fragaria*, *Iris*, *Ranunculus illiacus*, *Taraxacum*.

Flight period: April / June, in smaller numbers in March and July.

Larva: The larva was described and graphically depicted by Rotheray (1991). It lives and feeds within the roots of different species of *Primula* (Speight, 2001).

Distribution: From Ireland to Central and Southern Europe (former Yugoslavia); the European part of Russia. It has not been observed north of Denmark and is not known for the Pyrenees, although there is information about Spain.

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Krpač et al, 2001: 170).

Material: 16 specimens (5♂, 11♀).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 1♂, 3♀, May 23, 1995, (leg. Krpač).
New findings: Mavrovi Anovi, 1♂, 2♀, May 17, 2003. (leg. Krpač), SKO.

Comment: *C. antiqua* is a mountain species that prefer forest habitats.

10. *Cheilosia barbata* Loew, 1857
Habitat type: Young deciduous forests; shrubs in places where the ground is well drained and dry mountain pastures.

Adult: Adults are found in open forest areas, especially along streams. They live on vegetation up to 4 m in height. Males hover above the trail from 4 to 10m high.

Host plant: *Caltha*, *Chaerophyllum*, *Crataegus*, *Euphorbia*, *Ranunculus*, *Sambucus*, *Taraxacum officinale*, but mostly white Umbelliferae.

Flight period: May / August, with the largest number in July / and early August.

Larva: not described (Speight, 2001).

Distribution: Scandinavia south to central Spain; Britain in the east to Central Europe and parts of European Russia. Upperparts of southern Europe to the former Yugoslavia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Vujić, 1996: 71-72).

Material: 7 specimens (6♂, 1♀).

Verified literature data: (Vujić, 1996): Sharr Mountain, 1♂, 27.07; Mavrovo, 1♀., IBNS.

New findings: r. Radika, Pilana, 2♂, 04.07.1995, (leg. Krpač); Mavrovi Anovi, at *Taraxacum officinale* Wigg., 1♂, 16.05.2003, (leg. Krpač); Mavrovi Anovi, 1♂, May 17, 2003, (leg. Krpač); Mavrovo, Pilana, 1♂, 11 August 2004, (leg. Krpač), SKO.

Comment: *C. barbata* is found in forest communities of hilly and mountainous areas.

11. *Cheilosia bracusi* Vujić et Claussen, 1994
sub. *Cheilosia chloris* Meigen, 1822 in Glumac, 1968

Habitat type: Open terrains and forests; the length of the stream; wet forests of *Fagus*, at higher altitudes, on alpine silicate and carbonate pastures.

Adult: Adults fly fast and low. They rest on low-growing plants. Males hover at heights up to 3m.
Host plant: Compositae, Cruciferae, Umbelliferae, *Aposeris foetida*, *Trollius*, *Ranunculus*, *Telekia speciosa*, *Euphorbia helioscopia*, *Anthriscus sylvestris*.

Flight period: end of April.

Larva: Not described.

Distribution: Pyrenees (France, Spain), Jura (France, Switzerland), Central Germany, Alps (France, Austria, Italy), Apennines (northern Italy) (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings: (Vujić and Claussen, 1994: 138); (Vujić, 1995: 45); (Vujić, 1996: 73).

Material: 3 specimens (1♂, 2♀).

New findings: Mavrovi Anovi, May 25, 12017, 2♀, (leg. Krpač); Mavrovi Anovi, 1♂, May 29, 2017. (Leg. Krpač), SKO.

Comment: This species is very rare in Macedonia. This species is very similar to the species *C. canicularis* and *C. fraterna* with which it can easily be confused in nature because it occurs at the same time and lives in similar habitats in mountainous areas at an altitude of 500m and above.

12. *Cheilosia canicularis* (Panzer, 1801)
Habitat type: Forests and wetlands; open spaces along streams in the humid forests of *Fagus* and *Abies* to the height of the upper boundary.

Adult: Adults can be found on clearings, trails, along streams and on pastures. They rest on the leaves of shrubs and ground flora, especially on *Petasites*.

Host plant: Umbelliferae, *Ranunculus* sp., *Roripa* sp.

Flight period: End of June / September.

Larva: not described but known to develop in *Petasites hybridus* (Stuke and Claussen, 2000).

Distribution: Denmark, France (Meritheim Alps), Germany, Czech Republic, Slovakia, Switzerland (Jura), Austria, Italy (Alps, Apennines) and Turkey. The distribution of this species requires redefining due to *C. himantopus* which is a separate species from *C. canicularis* and has other area of spreading. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: Published findings (Glumac, 1968: 864); (Vujić, 1996: 75).

Material: 8 specimens (2♂, 6♀).

Verified literature data: (Glumac, 1968): Sharr Mountains, the valley of a stream, on *Roripa* sp., 2♂, 1♀, 28.05.1960; Tetovo, Vata Bogunović, meadow, on the flower of *Ranunculus* sp., 2♀, June 7, 1959, IBNS; (Vujić, 1996): Sharr Mountains, 2♀, July 17, IBNS; Mavrovo, 1♀, July 16, 1981, (leg. Čingovski), SKO.

Comment: *C. canicularis* is found throughout the Balkan Peninsula. It is a rare species in Macedonia, present in the mountains at higher altitudes.

13. *Cheilosia fasciata* Schiner et Egger, 1853

Habitat type: Forests and open spaces; moist deciduous forests, near waters or on alpine pastures.
Adult: Adults fly low, near the feeding plant, along the edges of the clearing. They rest on the leaves of *Allium ursinum*.

Host plant: *Allium ursinum, Chrysoplenium alternifolium, Ranunculus, Salix, Tussilago*.

Flight period: end of March.

Larva: Mines the leaves of *Allium ursinum* and *A. victorialis*. It overwinters as a pupa in the ground at a depth of 3 cm near the feeder plant. Detailed biological information on the development of this species was given by Hövermeyer (1992). The egg and larvae stages last together for 8 weeks, after which the cocooned stage (pupa) is placed in the ground near the host plant (Speight, 2001).

Distribution: Southern Norway; from southern Holland to northeastern France, the Alps, and the northern parts of the former Yugoslavia, Bulgaria, and Romania (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria.

Macedonia: Published findings (Vujić, 1996: 80).

Material: 60 specimens 55♀, 5♀.

Verified literature data: (Vujić, 1996): Sharr Mountains, Crn Kamen, 55♂, 5♀, April 19, 1987, IBNS.

Comment: *C. fasciata* is registered in Macedonia in a few localities. It is characteristic of the beech forests of the central part of the Balkan Peninsula. Findings from a study by Hövermeyer (1992) show that the sex ratio of adult *C. fasciata* individuals may depend on the way the pupa is parasitized, which reduces the presence of males in the population (Speight, 2001).

14. *Cheilosia frontalis* Loew, 1857

Habitat type: Near streams, floodplains, and poorly drained lands in mountain pastures (including small parts within forests) from the *Picea* zone up to 2000m.

Adult: Adults fly at altitudes up to 2m in hidden places, often following the banks of streams. They rest on the vegetation of low plants and shrubs.

Host plant: White Umbelliferae, *Acer pseudoplatanus, Anemone nemorosa, Cardamine, Salix*.
Flight period: April / May and June / July, at higher altitudes.

Larva: Not described.

Distribution: Finland and Scandinavia and mountainous parts of Europe in the south to the Pyrenees and northern Spain; from the Ardennes in the east to the Alps and further to the European parts of Russia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: Mavrovi Anovi is only one locality where this species is findings in Macedonia.
Material: 1 specimen (1♀).

New findings: Mavrovi Anovi, 1♀, May 27, 1981, (leg. Čingovski), SKO.

Comment: C. frontalis is endemic to the European continent. It is present in all major mountains of the Balkan Peninsula. There is confusion in the literature between this species and *C. hypena*. Males of *C. hypena* do not have discrete powdery spots on abdominal tergites which is the case with *C. frontalis*. Male specimens of *C. frontalis* have strictly limited, more rectangular, pale powdery spots on the abdominal tergites, which resemble *C. fasciata*. The body of *C. frontalis* is 6 to 7.5 mm long, while the body length of *C. hypena* is 8 to 11 mm. Females of *C. frontalis* can easily be confused with females of *C. hypena* or *C. melanopa* because they have fewer different characters and appear at the same time of the year. Verlinden (1999b) describes in detail the differences between *C. frontalis* and *C. hypena*.

15. *Cheilosia gigantea* (Zetterstedt, 1838)

Habitat type: open spaces, mountain, and alpine pastures, and in Scandinavia at lower altitudes.

Adult: Adults are found in pastures in the *Picea* forest zone. Males fly at a height of 2-5m, resting on leaves of grass and on rocks.

Host plant: Umbelliferae, *Caltha*, *Euphorbia*, *Geum*, *Ranunculus*, *Sorbus aucuparia*, *Taraxacum*.
Flight period: May / June (July / beginning of August at higher altitudes).

Larva: Not described (Speight, 2001).

Distribution: Southern Finland and Scandinavia to the Alps; eastern Germany through northern and central Europe (northern Italy and the former Yugoslavia), European parts of Russia and from Ukraine to the Caucasus, Siberia, from the Urals to the Pacific coast (Speight, 2001).

Balkan Peninsula: Slovenia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.
Macedonia: Published findings (Vujić, 1995: 46); (Vujić, 1996: 83).

Material: 12 specimens (7♂, 5♀).

Verified literature data: Mavrovo, 1♀, May 18, 1977, (leg Čingovski); Mavrovi Anovi, 4♂, 1♀, May 24, 1995, (leg Krpač); Mavrovi Anovi, 2♂, 2♀, May 25, 1995, (leg Krpač); Mavrovi Anovi, 1♂, 1♀, May 17, 2003, (leg Krpač), SKO.

Comment: For now, there are problems with identifying proxima group species and therefore a revision of the entire proxima group is needed. The species *C. gigantea* has been registered in Macedonia at only a few sites at an altitude above 1300m; it has also been observed in all mountain systems of the Balkan Peninsula, except in Greece.

16. *Cheilosia herculana* Bradescu, 1982
sub. *Cheilosia coerulescens* Meigen, 1822, in Glumac, 1968
Nigrocheilosia herculana (Bradescu, 1982), in Vujić, 1996

Habitat type: deciduous forests, usually beech forests at higher altitudes.

Adult: Adults can be found in clearings, open spaces, and rocky areas; they often rest on rocks exposed to the sun. Males hover at a height of 2-4m.

Host plant: *Ranunculus*, *Alyssum*.

Flight period: June / August.

Larva: Not described (Vujić, 1996).

Distribution: Carpathians and mountains in the central part of the Balkans (Montenegro, Macedonia). It is registered on two sites on the Balkan Peninsula: on the mountain Durmitor and in the valley of the river Radika (Vujić, 1995: 46; Vujić, 1996: 56-57).

Balkan Peninsula: Montenegro and Macedonia.

Macedonia: Published findings (Vujić, 1995: 46); (Vujić, 1996: 56-57).

Material: 7 specimens (4♂, 3♀).

Verified literature data: (Vujić, 1995 and Vujić, 1996): Dolina r. Radika, 1♂, 30.08.1959, IBNS;

New findings: Sharr Mountains, Tri Vodi, 3♂, 3♀, August 30, 1990, (leg. Krpač), SKO.

Comment: This very rare species is described by the Carpathians. It is registered in the central Balkans at a few localities: Durmitor in Montenegro; Radika River Valley, Sharr Mountains, Tri Vodi and Skopje, Kozjak Dam in Macedonia. An audit of the material of the Glumac's collection in Novi Sad established that the specimen from the locality Radika river valley, 1♂, August 30, 1959, (leg. Glumac) as *C. coerulescens* Meigen, 1822, in Glumac (1968: 863), refers to the species *C. herculana* Bradescu, 1982.

17. *Cheilosia himantopa* (Panzer, 1798)

Habitat type: Forests near fresh water, by streams and in open spaces in the humid forest of *Fagus*, and high above the zone of *Abies* and *Picea*, on alpine pastures up to 2000m.

Adult: Adults fly fast and low above-ground vegetation. They rest on the leaves of deciduous and low-growing plants.

Host plant: Yellow Compositae, Umbelliferae, *Taraxacum officinale*.

Flight period: end of April / August.

Larva: The larva collected from *Petasites* was described by Dusek (1962) under the name *C. canicularis*. Stuke and Claussen (2000) studied the biology of a larva that lives on the stem, leaves, and rhizomes of the host plant. This species overwinters in the larval stage (Speight, 2001).

Distribution: Sweden, Germany (Harz, Black Forest), France (Vosges), Alps (France, Germany, Switzerland, Liechtenstein, Austria, Italy) and Apennines (Italy), Bulgaria, former Yugoslavia. (Speight, 2001).

Balkan Peninsula: Montenegro, Macedonia, and Bulgaria.

Macedonia: Published findings (Krpach et al, 2006).

Material: 6 specimens (2♂, 4♀).

New findings: Mavrovi Anovi, 1♂, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, June 5, 1996, (leg. Krpač); Mavrovi Anovi, 3♀, June 06, 1996, (leg. Krpač); Mavrovi Anovi, meadow by the stream, on *Taraxacum officinale*, 1♂, May 16, 2003, (leg. Krpač), SKO.

Comment: *C. hymantopa* is a mountain species and very similar to the species *C. canicularis* which often leads to misidentifications.

18. *Cheilosia illustrata* (Harris, 1776)

Habitat type: Deciduous forests, pastures, meadows, including mountain pastures bordered by forest.
Adult: Adults are found in open places, next to forest paths and clearings, on pastures and meadows.
Host plant: White Umbelliferae, but very often *Heracleum*, *Matricaria*, *Prunus*, *Rubus*, *Sambucus*, *Ranunculus*, *Euphorbia*.

Flight period: May / September.

Larva: Develops in the roots of *Pastinaca sativa* and *Heracleum* (Rotheray, 1999a). Females lay eggs on the *Heracleum* (Doczkal, 1996b). The species overwinters as a puppet (Speight, 2001).

Distribution: from Finland and Scandinavia to Spain and from Ireland to the western parts of Siberia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a rare species in Macedonia (Glumac, 1968).

Published findings: (Glumac, 1968: 864); (Vujić, 1996: 86).

Material: 5 specimens (3♂, 2♀).

Verified literature data: (Glumac, 1968): Tetovo, Vata Bogunović, meadow, on *Ranunculus* sp., 1♀, June 7, 1959; IBNS; (Vujić, 1996): Sharr Mountains, 3♂, July 27, 1987, IBNS.

New findings: Mavrovi Anovi, 1♀, July 10, 1998, (leg. Krpač), SKO.

Comment: This species is registered in the Mountains of the Balkan Peninsula. Our research has shown that this species is not rare, as stated in Glumac (1968), on the contrary, it was found in numerous localities in Macedonia, in coniferous forests.

19. *Cheilosia impressa* Loew, 1840

Habitat type: Deciduous forests and wetlands; open forest habitats; on pastures and swamps, all the way to the alpine zone.

Adult: Adults were observed on forest clearings and along forest trails. Males hover at a height of 2-5m.

Host plant: Prefer white Umbelliferae, Compositae, *Cirsium*, *Euphorbia*, *Filipendula*, *Geranium*, *Mentha*, *Prunus*, *Ranunculus*, *Rubus*, *Anthriscus sylvestris*, *Lapsona*, *Chrysanthemum*, *Roripa*.

Flight period: May / July and August / September (the species is most numerous in July), the next generation may be limited or not appear at all.

Larva: It develops by feeding on the roots and underground parts of the *Arctium* tree. Probably the species also have alternative food sources because it is also found in places where there is no *Arctium* (Speight, 2001).

Distribution: Finland and Scandinavia, in the south to the Pyrenees and northern Spain; Ireland, east across Central Europe to European parts of Russia and across Siberia to the Pacific (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 864); (Vujić, 1996: 87).

Material: 11 specimens (4♂).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, the valley of a mountain stream, on leaves, 1♂, May 30, 1960; Mavrovi Anovi, forest, on flower *Anthriscus sylvestris*, 3♂, 1♀, August 01-03, 1961; valley of the river Radika, on leaves, 1♂, May 31, 1960; Tetovo, Vata Bogunović, meadow, on *Ranunculus* sp., 3♂, June 7, 1959; Sharr Mountains, stream valley, on the flower of *Roripa* sp., 1♀, May 28, 1960, IBNS; (Vujić, 1996): Sharr Mountains, 3♂, 2♀, July 27, 1987, IBNS.

Comment: This species is common in the forest communities of the Balkan Peninsula, except the Mediterranean. *C. impressa* is related to *C. schnabli* Beck. These are unique among European species of *Cheilosia* that have protrusions (like a bump) on the outer surface of the anterior coke in both sexes (Vujić et al, 1998a). These two species are very similar in appearance, but differ in the surface of the mesoscutum, which is finely punctured in *C. schnabli*, and roughly punctured in *C. impressa*. Graphic representation of male genitalia of both taxa is given by Vujić et al, (1998a). The range of *C. schnabli* is limited to the Balkan Peninsula and the Caucasus and can be found together with *C. impressa*, (Speight, 2001).

20. *Cheilosia laticornis* Rondani, 1857
syn. *Cheilosia latifacies* Loew, 1857 in Vujić, 1996

Habitat type: Forests and open spaces with high vegetation, in addition to mountain trails, in southern European deciduous forests (mesophilic *Fagus*, *Castanea*) and on mountain pastures.

Adult: Adults fly between tall plants, resting on leaves.

Host plant: Umbelliferae and yellow Compositae.

Flight period: End of April / June and end of July / beginning of September.

Larva: Not described (Speight, 2001).

Distribution: Poland, Czech Republic, southern Germany (Bavaria), France (Pyrenees, Causses, Cevennes, Central Alps), Switzerland (Swiss plateau, Rhone valley), Austria, Italy (and Sicily), Romania, southern Russia and Ukraine to the Transcaucasia and Kyrgyzstan, then Afghanistan, Turkey, Israel, and North Africa (Algeria, Libya) (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, and Macedonia.
Macedonia: In Macedonia, the species is registered in several localities as *C. latifacies*.

Published findings: (Vujić, 1996: 89).

Material: 1 specimen (1♀).

Verified literature data: as *C. latifacies* in Vujić (1996): r. Radika, 1♂, April 17, 1987., IBNS.
Comment: *C. laticornis* is characteristic of the Mediterranean and Sub-Mediterranean zones, but it is also found in Macedonia on the mountains.

21. *Cheilosia melanura* Becker, 1894 ssp. *rubra* Vujic, 1996

Habitat type: Open spaces, on alpine silicate and carbonate pastures, from the *Picea* zone upwards.
Adult: Adults fly fast in meadows and often along streams. Males hover at a height of 2-4m; they land on the leaves of *Caltha* and *Gentiana*.

Host plant: White Umbelliferae, *Caltha palustris*, *Euphorbia*, *Ranunculus*.

Flight period: Mid-May / August.

Larva: Not described (Vujić, 1996).

Subspecies distribution: Balkan Peninsula: Montenegro, Serbia, Macedonia, and Greece.

Macedonia: In Macedonia, this subspecies has so far been registered only on the Sharr Mountains.
Published findings: (Vujić, 1996: 98).

Material: 5 specimens (5♀).

Verified literature data: (Vujić, 1996): Sharr Mountains, Vata Bogunović, 1♀, June 07, 1959, IBNS; Ljuboten, 1♀, ??. July 1935., BHMS.

New findings: Mavrovi Anovi, 2♀, July 19, 1970, (leg. Čingovski); Mavrovi Anovi, 1♀, May 23, 1995, (leg. Krpač).

Comment: This subspecies is endemic to the southern Dinara and is also found on Sharr Mountains and Verno at higher altitudes (Vujić, 1996: 98).

22. *Cheilosia mutabilis* (Fallen, 1817)

Habitat type: Open spaces and forests of open complex (coniferous and deciduous), on a well-drained substrate. In Sweden, Denmark and along the northern coast of Germany, C. mutabilis has been designated as a coastal species.

Adult: Adults fly on clearings and along forest paths up to 2m above the ground; resting on the leaves of bushes.

Host plant: White Umbelilferae, *Alisma plantago-aquatica*, *Cystus*, *Hieracium*, *Jasione montana*, *Potentilla fruticosa*, *Sedum acre*, *Euphorbia*, *Orlaya grandiflora*, *Daucus carota*, *Heracleum sphondylium*, *Anthriscus sylvestris*, *Sambucus*, *Torilis*, *Ranun*.

Flight period: May / mid-August, and the most massive in July.

Larva: Not described (Speight, 2001).

Distribution: From Finland and Scandinavia south to the Iberian Peninsula; the Mediterranean and North Africa; from Britain in the east through much of Europe, Turkey, and the European part of Russia to western Siberia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 864); (Vujić, 1996: 101).

Material: 8 specimens (2♂. 6♀).

Verified literature data: (Glumac, 1968): Tetovo, Staro Selo, valley of a stream, on a flower *Euphorbia* sp., 1♂, May 28, 1960; Mavrovi Anovi, meadow, on flower *Euphorbia* sp., 5♀, 30.05.1960; the valley of the river Radika, on leaves, 1♂, May 31, 1960; IBNS; Mavrovi Anovi, 1♀, July 29, 1964, SKO.

Comment: *C. mutabilis* is marked as a coastal species. It is spread throughout the Balkan Peninsula; in Macedonia it is most common in river valleys.

23. *Cheilosia nigripes* (Meigen, 1822)
Nigrocheilosia nigripes (Meigen, 1822) in Vujić, 1996

Habitat type: Deciduous forests, on a limestone base.

Adult: Adults are found on forest clearings and along forest trails. They fly low, often 2m above the ground. They rest on low-growing plants and shrubs.

Host plant: White Umbelliferae, *Prunus padus*, *Ranunculus illiacus*, *Rubus idaeus*, *Taraxacum*.
Flight period: May / June and July / beginning of August at higher altitudes.

Larva: Not described (Speight, 2001).

Distribution: From Finland and Scandinavia in the south to the Pyrenees and northern Spain and from northern England in the east through Central and Southern Europe (northern Italy, former Yugoslavia), Turkey, European parts of Russia through Siberia to the Pacific coast (Speight, 2001).
Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common widespread species in Macedonia.

Published findings: (Vujić, 1995: 46) and as *N. nigripes* in Vujić (1996: 61).

Material: 9 specimens (4♂, 5♀).

Mavrovi Anovi, 2♂, 3♀, May 30, 1960; r. Radika, 1♀, May 31, 1960; Mavrovi Anovi, 2♂, May 30, 1960, IBSN;

New findings: Mavrovo, Lukovo Pole, 1♀, 23.05.1995., (leg Krpač), SKO.

Comment: *C. nigripes* is one of the widespread species of the genus. We find it in all types of forest communities on the Mountains. This species is numerous in the deciduous forests of southern Europe. *C. nigripes* is very difficult to distinguish from *C. vicina*, due to similarities in females. They differ only in the shape and length of the clipeus, which in *C. nigripes* is about 1.5 times longer than it is wide, and in *C. vicina* it is noticeably longer (Speight, 2001: 52).

24. *Cheilosia orthotricha* Vujic et Claussen, 1994

Habitat type: Near fresh water, in the humid forests of *Fagus* and *Quercus*, next to streams and forest trails.

Adult: Adults fly in open terrain by a stream. They rest on the ground or on the leaves of broad-leaved plants *Petasites*. Males fly at an altitude of 1-3 m (Vujić, 1996).

Host plant: *Petasites hybridus*, *Salix*, *Taraxacum*.

Flight period: February / May (June and July at higher altitudes).

Larva: Not described, but Stuke and Claussen (2000) observed larvae in the lower half of the *Petasites hybridus* flower stalk.

Distribution: Distribution data are uncertain because this species has been mixed with *C. canicularis* in many collections. It is present in Belgium (Ardennes) and France (Jura), in the east through Central Europe (Germany, Switzerland, the Czech Republic, Slovakia, Hungary) to Serbia, Croatia and Bosnia (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, and Macedonia.
Macedonia: in Macedonia, it is observed as a very rare species, registered in several localities.
Published findings: (Krpač et al, 2001: 171).

Material: 3 specimens (2♂, 1♀) SKO.

Verified literature data: r. Radika, 1♂, May 18, 1978, (leg. Čingovski); Mavrovo, s. Nichpur, 1♂, 1♀, May 10, 1996., (leg. Krpač) SKO.

Comment: *C. ortotricha* has been recorded in Macedonia on hills and at lower altitudes, while in the central part of the Balkan Peninsula it has been found on the mountains. *C. ortotricha* is a species that is very difficult to distinguish from *C. canicularis* (Panz.), due to the similarity of their females.

25. *Cheilosia pascuorum* Becker, 1894

Habitat type: Moist deciduous forests *Quercus* and *Fagus* (Vujić, 1996); silicate pastures above 2000m in Goeldlin and Speight, (1997).

Adult: Adults of males fly 2-5m above the ground. They rest on the ground or with flowers (Vujić, 1996).

Host plant: *Alyssum*, *Ficaria* (Vujić, 1996).

Flight period: April / beginning of June and in July at higher altitudes (Vujić, 1996).

Larva: Not described but is known to feed on the plant *Cynoglossum officinale* (Vujić, 1996).
Distribution: Alps (France, Germany, Switzerland, Austria), Romania, parts of European Russia, Balkan Peninsula (Speight, 2001).

Balkan Peninsula: Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.
Macedonia: Published findings (Vujić, 1994: 450); (Vujić, 1995: 46); (Vujić, 1996: 104).

Material: 2 specimens (2♂).

Verified literature data: (Vujić, 1994; Vujić, 1995 and Vujić, 1996): Mavrovi Anovi, 1♂, 30.05.1960, (leg. Glumac) IBNS.

New findings: Mavrovi Anovi, 1♂, 25.05.1995. (leg. Krpač), SKO.

Comment: *C. pascuorum* is rare species on the Balkan Peninsula and has been recorded in a few localities in different types of deciduous forests. *C. pascuorum* is a species very similar to *C. proxima* (Zetterstedt, 1843) and *C. velutina* Loew (Vujić, 1996).

26. *Cheilosia proxima* (Zetterstedt, 1843)

Habitat type: Coniferous and deciduous forests of acidophilic *Quercus* and moist forests of *Fagus* and *Picea*; it is found both in thickets and on pastures.

Adult: Adults fly along forest paths and on clearings, in small open spaces in the forest and on pastures between bushes. Males hover between trees up to 6m tall; they rest on the leaves of bushes and trees, at a height of up to 3m.

Host plant: white *Umbelliferae, Prunus spinosa, Ranunculus, Valeriana dioica, Orlaya grandiflora, Crataegus monogyna, Pastinaca sativa, Daucus carota, Lapsona, Euphorbia, Chrysanthemum.*
Flight period: April / September and the most massive in June, July, and August.

Larva: It has been observed on the rosettes of *Cirsium palustre* and *C. oleraceum* where it feeds on roots. The species overwinters in the form of puppets (Speight, 2001).

Area: From Finland and Scandinavia south to the Pyrenees and the mountainous part of Spain; from Britain east through much of Europe to Turkey and the European part of Russia; in Siberia from the Urals to Kamchatka (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 865); (Vujić, 1996: 108).

Material: 11 specimens (5♂, 6♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, forest, on a flower *Daucus carota*, 2♂, 3♀, 01.-03.07.1961, IBNS.

New findings: Mavrovi Anovi, 1♀, May 25, 1995, (leg. Krpač); Mavrovi Anovi, meadow, on *Euphorbia* sp., 3♂, 2♀, May 17, 2003, (leg. Krpač), SKO.

Comment: This species has been observed throughout the Balkan Peninsula, in various forest communities. *C. proxima* is very difficult to distinguish due to its great similarity with *C. aerea* and *C. gigantean* species.

27. *Cheilosia ranunculi* Doczkal, 2000

Habitat type: Open spaces, dry pastures, and open habitats in the forest, at an altitude of up to 1500m in the *Abies* zone.

Adult: Adults fly at altitudes up to 1m, on grassy places. They rest on the flowers and leaves of low-growing plants.

Host plant: *Caltha*, *Ranunculus*, *Taraxacum officinale*, Euphorbia sp.

Flight period: End of April / beginning of June.

Larva: Not described; it is believed to be closely related to the *Ranunculus bulbosus* plant (Doczkal, 2000), although Gibbs and Plant (2001) list a species from a locality where the *R. bulbosus* plant is not present.

Distribution: The distribution of *C. ranunculi* is still not sufficiently known due to its recent separation from *C. albitarsis*. It has been found in Britain (southern England), France (south of the Paris Basin), Germany, Switzerland, Hungary, Italy, Spain, parts of the former Yugoslavia, Bulgaria, and Romania (Doczkal, 2000).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, and Bulgaria.
Macedonia: The species is registered in a small number of localities.

Material: 13 specimens (8♂, 5♀).

New findings: Mavrovi Anovi, 1♂, May 24,1995, (leg. Krpač); r. Radika, Pilana, 1♂, 2♀, May 25, 1995., (leg Krpač); Mavrovi Anovi, meadow, on flower *Taraxacum officinale*, 3♂, 1♀, May 16, 2003, (leg. Krpač); Mavrovi Anovi, meadow, on *Euphorbia* sp., 1♂, 1♀, May 17, 2003, (leg. Krpač), SKO.

Comment: This species is almost separated from the species *C. albitarsis* with which it is very similar. These two species are very difficult to distinguish because they appear in nature at the same time and in the same localities. Only males can differ in the structure of the genital apparatus.

28. *Cheilosia scutellata* (Fallen, 1817)

Habitat type: Various forest types, from northern European coniferous forests to the Mediterranean macchia but not related to *Betula*, *Fraxinus* or *Picea forests*.

Adult: Adults are often found on low-growing vegetation and on bushes in the forest where the sun penetrates poorly, along forest paths and the edges of clearings.

Host plant: White Umbelliferae, *Chaerophyllum*, *Cirsium*, *Cystus*, *Crataegus*, *Galium*, *Hedera*, *Hieracium*, *Ranunculus*, *Sorbus*.

Flight period: May / September and April / October (and even November) in southern Europe.

Larva: Lives in fungi, especially *Boletus* and *Suillus* in Dely - Draskovits, (1972).

Distribution: Finland and Scandinavia, south to the Iberian Peninsula and around the Mediterranean to Greece, Turkey, and North Africa; from Ireland, east across Eurasia to the Pacific coast (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: In Macedonia, it is a common, widespread, and numerous species.

Published findings: (Glumac, 1968: 865); (Vujić, 1996: 111).

Material: 16 specimens (7♂, 9♀).

Verified literature data: (Glumac, 1968): Tetovo, Staro Selo; Azajnica; Vrutok; Radika river valley, IBNS; (Vujić, 1996).

New findings: Mavrovi Anovi, 1♀, July 29, 1964, and 1♂, August 01, 1964, IBNS; Mavrovi Anovi, 1♀, August 03, 1961, (leg. Glumac); Tetovo, village of Vratnica, 1♂, July 26, 1971, (leg. Čingovski); Mavrovi Anovi, 1♀, June 22, 1975, (leg. Čingovski); Mavrovi Anovi, 2♂, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 2♂, 4♀, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 2♀, July 05, 1975, (leg. Čingovski) SKO.

Comment: *C. scutellata* is a species that is widespread in the Palearctic. We find it in all countries of the Balkan Peninsula. In Macedonia, it is registered in high mountain areas.

29. *Cheilosia soror* (Zetterstedt, 1843)

Habitat type: Deciduous forests, old forests of *Fagus* and *Quercus* and alluvial forests of *Salix* and *Populus*.

Adult: Adults fly on clearings, next to shady forest trails.

Host plant: White Umbelliferae, *Cirsium*, *Taraxacum.*

Flight period: May / September, and the most massive in June / July.

Larva: Not described (Speight, 2001).

Distribution: Finland and Scandinavia south to North Africa and from Britain (southern England), east across much of Europe to Siberia and further to the Pacific coast including Japan. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia,

Bulgaria and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 865); (Vujić, 1996: 113).

Material: 11 specimens (10♂, 1♀).

Verified literature data: (Glumac, 1968): Tetovo, Vata Bogunović; Vrutok; Mavrovi Anovi; the valley of the river Radika; Tetovo, Staro Selo, IBNS; (Vujić, 1996): Mavrovi Anovi, 2♂, July 29, 1964, IBNS;

New findingsing: r. Radika, Lukovo Pole, 1♂, September 06, 1994, (leg. Krpač); r. Radika, Pilana, 7♂, 1♀, July 04, 1995., (leg. Krpač) SKO.

Comment: *C. soror* inhabits the entire Balkan Peninsula. In Macedonia, it is registered in several localities from the lowlands to the mountainous parts of the country. This species often appears in recent literature under the name *C. ruffipes* (Preyssler).

30. *Cheilosia urbana* (Meigen, 1822)

syn. *Cheilosia ruralis* (Meigen, 1822) in Vujić, 1995

syn. *Cheilosia praecox* (Zetterstedt, 1843) in Vujić, 1996

Habitat type: Coniferous and deciduous forests, in thickets and on wet pastures.

Adult: Adults can be found on forest clearings and along forest trails. They fly low, usually up to 1m above the ground. They rest on low-growing plants. Males hover at a height of 1-2m, near the bushes in bloom or above the rocks.

Host plant: White Umbelliferae, *Anemone nemonesa*, *Caltha*, *Euphorbia helioscopia*, *Potentilla*, *Salix*, *Veronica chamaedrys*, *Prunus*, *Plantago lanceolata*, *Ranunculus repens*, *Taraxacum officinale*.

Flight period: April / June, and in July at higher altitudes / northern latitudes.

Larva: Not described. Claussen (1980) and Doczkal (1996b) found that the female lays eggs on the basal leaves of the rosette of *Hieracium pilosella*, while Stuke (1996) found a larva on *H. pilosella*, and Kassebeer (1993) found that the female lays eggs on the plant. *Filipendula ulmaria*.

Distribution: From Finland and Scandinavia to the Iberian Peninsula and the Mediterranean (including Crete), from Britain, in the east through Central and Southern Europe to the Balkan Peninsula and Turkey, and in North Africa (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece

Macedonia: It is a common, numerous and widespread species in Macedonia, registered in its two synonyms: *C. praecox* and *C. ruralis* (Meigen, 1822).

Published findings: as *C. ruralis* in Vujić (1995: 46); as *C. praecox* in Vujić (1996: 107).

Material: 83 specimens (51♂, 32♀)

Verified literature data: as *C. ruralis* as Vujić (1995): Mavrovi Anovi, 1♀, May 30, 1960, and 4♀, June 30, 1960; r. Radika, 2♂, 2♀, May 31, 1960. IBNS. as *C. praecox* in Vujić, (1996): Radika, 36♂, 6♀, 17.04.; Mavrovi Anovi, 4♀, May 30, 1960; r. Radika, 2♂, 1♀, May 31, 1960., IBNS.

New findings: Mavrovi Anovi, 2♀, 23 May 1995, (leg. Krpač); Mavrovi Anovi, 1♂, 2♀, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, 5♀, May 25, 1995, (leg. Krpač); r. Radika, Lukovo Pole, 2♂, May 10, 1996, (leg. Krpač); Mavrovi Anovi, on the flower of *Plantago lanceolata*, *Ranunculus repens*, *Taraxacum officinale*, 2♂, 2♀, May 16, 2003, (leg. Krpač); Mavrovi Anovi, on the flower of *Petasites* sp., *Euphorbia* sp., *Taraxacum officinale*, 1♂, 3♀, May 17, 2003, (leg. Krpač), SKO.

Comment: This is one of the most frequently registered and most numerous species. In Macedonia, it is found in all types of forest communities. *C. urbana* is referred to in the latest literature as *C. praecox* (Zetterstedt). Speight et al (1998) indicate that its proper name is *C. urbana* (Meigen). Claussen and Kassebeer (1993) and Speight (1996) separated the species from the very similar *C. latigenis* Claussen et Kassebeer, *C. mutabilis* (Fallen) and *C. psilophthalma* Becker. Differences between *C. urbana* and its close Central European species *C. vujici* were described by Claussen and Doczkal (1998). They refer to antennas that in this species can be completely black or in shades lighter, and the lightest, i.e., orange, is the third antenna segment. Specimens with orange antennae are difficult to determine with existing keys, because they state that *C. urbana* has a brown to black antenna (Speight, 2001)

31. *Cheilosia variabilis* (Panzer, 1798)

Habitat type: Moist / mesophilic deciduous forests from the *Fagus* / *Picea* zone to alluvial dense forests.
Adult: Adults are found along forest paths and in clearings. They rest on the leaves of the Rubus fruticosus bush and on high-growing vegetation such as Pteridium. They fly fast around the bushes.
Host plant: white Umbelliferae, *Caltha*, *Cirsium*, *Euphorbia* (*E. polychroma*, *E. helioscopia*) *Galium*, *Ranunculus*, *Rubus*, *Torilis* sp., *Sambucus* sp., *Scrophularia nodosa*, *Anthriscus sylvestris*, *Sorbus aucuparia*.

Flight period: April / September, with one generation appearing in the north of the range in June / August and with two generations in the south of the area in April / June and July / September.

Larva: Mines the roots of the plant *Scrophularia nodosa* (Speight, 2001).

Distribution: From southern Scandinavia in the south to the Iberian Peninsula; from Ireland, in the east through Central and Southern Europe (Italy, former Yugoslavia), in Bulgaria, Turkey and Russia to

western Siberia; in North Africa (Morocco).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 866).

Material: 3 specimens (2♂, 1♀).

Verified literature data: (Glumac, 1968): Mavrovo, valley of a mountain stream, on flower *Ranunculus* sp., 1♂, 1♀, May 30, 1960; Tetovo, Vata Bogunović, meadow, on *Ranunculus* sp., 1♀, June 7, 1959; IBNS:

New findings: Mavrovi Anovi, 1♂, May 23, 1995, (leg. Krpač, SKO.

Comment: In the Balkan Peninsula, this is one of the species with a larger population. It is present in almost all types of forest communities, except in southern Greece and the Mediterranean area. In Macedonia, it is registered in numerous localities and different habitat types.

32. *Cheilosia vernalis* (Fallen, 1817)

Habitat type: Open spaces and deciduous forests, oligotrophic and eutrophic pastures and *Molinia* - acid meadows that are the product of seasonal floods.

Adult: Adults fly low above ground vegetation. Males hover at 1-3m, on small areas - clearings.
Host plant: white Umbelliferae, *Caltha*, *Cirsium arvensis*, *Leontodon*, *Leucanthemum*, *Menyanthes*, *Prunus spinosa*, *Ranunculus*, *Salix*, *Senecio*, *Taraxacum*.

Flying period: April / October, and the most massive May/June and August.

Larva: Not described, but known to feed on the contents of the stem of *Achillea*, *Matricaria*, *Sonchus oleraceus*; it was also found on the bark of *Tragopogon* (Bankowska, 1980; Torp, 1984).
Distribution: from Finland and Scandinavia, south to the Iberian Peninsula; from Ireland, in the east through Central and Southern Europe (Italy, former Yugoslavia) to Turkey; European parts of Russia and across Siberia to the Pacific coast (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria.
Macedonia: Registered at only two sites.

Published findings: (Vujić, 1996: 117).

Material: 4 specimens (3♂, 1♀).

Verified literature data: (Vujić, 1996): Sharr Mountains, 3♂, 1♀, April 18., IBNS.

Comment: This species is widespread throughout the Balkan Peninsula, and its population is more numerous at lower altitudes. The species is rare in Macedonia. For now, it is registered at two sites, Nidze and Sharr Mountains. Recent literature data state that *C. vernalis* represents a complex of several species, but a satisfactory basis for its division has not yet been given. The male genitalia have been observed to look identical in different variants within *C. vernalis* (Fallen). Spring specimens of the species have mostly brown hairs and often an orange third antennae segment, while summer specimens on the third antennae segment have black or dark brown hairs. Specimens with orange antennas can hardly be properly determined with existing keys. The species *C. sootryeni* Nielsen, 1970 is not included in the newer keys, and is very similar to the species *C. vernalis*. It clearly differs from it in the characteristics of the male genital apparatus. Therefore, some authors mix these two species (Speight, 2001).

33. *Cheilosia vicina* (Zetterstedt, 1849)
Nigrocheilosia vicina (Zetterstedt, 1849) in Vujić, 1996

Habitat type: Coniferous and deciduous forests; open forest terrains; pastures from *Fagus* and *Picea* zones to the Alpine zone.

Adult: Adults stay in clearings and along forest trails. They fly 2m above the ground. They rest on the leaves of ferns and bushes.

Host plant: *Caltha*, *Convolvulus*, *Galium*, *Potentilla erecta*, *Prunus spinosa*, *Ranunculus*, *Taraxacum*.

Flight period: May / July, and at higher altitudes and northern latitude and in August.

Larva: Not described (Speight, 2001).

Distribution: from Finland and Scandinavia, south to the Pyrenees and northern Spain; from Ireland, in the east through northern, central, and southern Europe (northern Italy and the former Yugoslavia), in the European part of Russia, Turkey, in Siberia to Tuva (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Registered at only two sites.

Published findings: (Vujić, 1995: 47); (Vujić, 1996: 64).

Material: 1 specimen (1♀).

Verified literature data: (Vujić, 1995): Mavrovi Anovi, 1♀, May 30, 1960, IBNS; as *N. vicina* in Vujić (1996): IBNS.

Comment: In the literature on the distribution of *C. vicina*, it has been recorded that it lives in almost all forest communities in all biogeographical territories of the Balkan Peninsula. It is especially numerous in beech and oak forests. It has not been observed in the Mediterranean and sub-Mediterranean areas. Only two localities are known in Macedonia. Probably this species has not been sufficiently researched. Using existing keys for determination, females of *C. vicina* cannot be precisely separated from females of *C. nigripes* (Mg.). The only sure characteristic by which females can be separated is by the shape of the postclipus. In *C. nigripes* the postclipeus is in the middle 1½ x longer than the maximum width, and in *C. vicina* it is close to 2 x longer than wider. In recent literature, this species is referred to as *C. nasutula* Becker. Lucas et al (1995) found that *C. nasutula* Becker, 1894 a younger synonym for *C. vicina* (Claussen and Doczkal, 1998).

34. *Cheilosia vulpina* (Meigen, 1822)
syn *Cheilosia conops* Becker, 1894 in Glumac, 1968

Habitat type: Forests and pastures.

Adult: Adults are found in sparse coniferous and deciduous forests, on pastures at the height of the Picea forest, usually on well-drained soil. Males hover up to 15m above the ground.

Host plant: white Umbelliferae, especially *Heracleum*, *Cherophylum*, *Bellis*, *Galium*, *Ranunculus*, *Pastinaca sativa*, *Crepis* sp., *Euphorbia* sp.

Flight period: April / June and July / September.

Larva: The larva and pupa were described by Brunel and Cadou (1990a), collected during cultivation from the root of cultivated artichoke (*Cynara scolymus*).

Distributon: From Denmark to the Pyrenees and northern Spain; from Britain (England) through Central Europe to the central and southern parts of Russia; Western Siberia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Registered at several sites.

Published findings: as *C. conops* in Glumac (1968: 864); (Vujić, 1995: 47); (Vujić, 1996: 118).

Material: 14 specimens (10♂, 4♀).

Verified literature data: as *C. conops* in Glumac (1968): Mavrovi Anovi, spruce forest, on a flower *Crepis* sp., 3♂, 30.08.1959, (leg. Glumac) IBNS (Vujić, 1995); Mavrovi Anovi, 1♀, July 29, 1964. IBNS; (Vujić, 1996):

New findings: Mavrovi Anovi, 1♂., July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, June 04, 1982, (leg. Čingovski); Mavrovo, 1♂, May 24, 1995, (leg. Krpač); Mavrovo, Bunec, 2♂, May 25, 1995, (leg. Krpač); Debar, Krčin Mountain, 1♂, 2♀, May 25, 1995, (leg Krpač); Mavrovi Anovi, 1♂, 1♀, on *Euphorbia* sp., May 17, 2003, (leg. Krpač), SKO.

Comment: It is spread throughout the Balkan Peninsula. In the literature on the territory of Macedonia, it is noted as a rare species (Glumac, 1968).

Genus *Chrysogaster* Meigen, 1822

According to van der Goot (1981), 6 species of the genus *Chrysogaster* have been registered in Europe. Three species are known for Macedonia, *C. basalis* Loew, 1857; *C. mediterraneus* Vujic, 1999 and *C. solstitialis* (Falen), 1817. In the area of Sharr Mountains, 2 species have been confirmed. The development of larvae of species of this genus takes place in the tissues of aquatic plants.

35. *Chrysogaster basalis* Loew, 1857

sub. *Chrysogaster chalybeata* (Meigen, 1822) in Glumac, 1968

sub. *Chrysogaster solstitialis* (Fallen, 1817), in Glumac, 1968 (in part)

sub. *Chrysogaster viduata* Linnaeus, 1758 in Glumac, 1968 (in part)

Habitat type: Freshwater and forests; springs and streams in deciduous forests (acidophilic and thermophilic *Quercus* and mesophilic *Fagus*).

Adult: Adults fly with rapid movements over high vegetation; resting on flowers.

Host plant: white Umbelliferae, *Chrysanthemum leucanthemum*, *Potentilla erecta*, *Euphorbia* sp., *Sambucus* sp., *Torilis* sp., *Heracleum sphondylium* and *Orlaya grandiflora*.

Flight period: Mid-June / August, and the most massive in July.

Larva: Not described (Speight, 2001).

Distribution: From northern France and southern Germany, in the south to Spain and Portugal; in North Africa; Switzerland, Romania and most of the Balkan Peninsula (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Serbia, Macedonia, and Greece.

Macedonia: It is often found in humid places and at higher altitudes.

Published findings: as *C. chalybeata* in Glumac (1968: 862); (Vujić, 1995: 47).

Material: 6 specimens (4♂, 2♀).

Incorrect literature data: as *C. chalybeata* (Glumac, 1968: 862): Azajnica, by the river, wet meadow, on *Heracleum sphondylium*, 2♂, 1♀, June10, 1959, (leg. Glumac); Tetovo, Staro Selo, stream valley, on *Euphorbia* sp., 1♂, May 28, 1960, (leg. Glumac); as *C. viduata* in Glumac (1968: 862) (in part): r. Radika, on *Euphorbia* sp. and *Heracleum* sp., 1♂, May 31, 1960, (leg. Glumac) SKO.

Verified literature data: (Vujić, 1995): Mavrovi Anovi, 1♀, August 27, 1996, IBNS.

Comment: All specimens of *C. chalybeata* published by Glumac (1968: 862) refer to *C. basalis*. Some of the specimens identified as *C. solstitialis* and *C. viduata* in Glumac (1968) also refer to the species *C. basalis*. This species is often found in Macedonia, in humid places and at higher altitudes.

36. *Chrysogaster solstitialis* (Fallen, 1817)

Habitat type: Wetlands and deciduous forests; next to forest streams and lakes.

Adult: Adults reside along streams and lakes, in forests and shrubs including Salix. They visit the banks of the stream during the summer heat.

Host plant: White Umbelliferae; *Cornus*, *Filipendula*, *Galium*, *Sambucus*, *Senecio jacobaea*.

Flight period: June / September (in southern Europe and in May).

Larva: A larva lives in an aquatic environment; described by Hartley (1961). The larvae are collected from muddy lakes, which are full of broken twigs and sediments, from shallow waters (1 cm deep) that protrude, and from puddles that form in the spring in deciduous forests.

Distribution: From Scandinavia in the south to the Iberian Peninsula and the Mediterranean, including North Africa; from Ireland in the east through most of Europe to European parts of Russia, in Ukraine and the Caucasus.

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species.

Published findings: (Glumac, 1968: 862); (Vujic, 1999b).

Material: 8 specimens (3♂, 5♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, 1♀, August 30, 1959, (leg. Glumac); Mavrovi Anovi, 1♀, August 03, 1961, (leg. Glumac); Mavrovi Anovi, 1♀, July 10, 1998, (leg. Krpač) IBNS.

New findings: Mavrovi Anovi, 1♂, 1♀, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, 1♀, July 05, 1975, (leg. Čingovski); Mavrovi Anovi, Nikiforovo, 1♂, July 10, 1998, (leg. Krpač), SKO.

Comment: Females of this species can be easily mixed with females of *C. basalis*. In females of *C. solstitialis*, the forehead in the area of the antennae is straight and the antennae are located in the middle of the head (seen from the profile). In *C. basalis*, the forehead is straight, and the antennae are located slightly lower than the middle of the head (seen from the profile). European species *C. mediterraneus*, can easily be found in confusion with *C. solstitialis*. Vujic (1999b) gives characteristic features by which these two species can be easily divided.

Genus *Chrysotoxum* Meigen, 1803

This genus requires revision as far as European species are concerned. Dissection of the genital apparatus of males in a large number of European species shows that their structure is identical, and the question is whether this is a characteristic by which these species can be doubled, or they are just color varieties of one species (Speight, 2001). The concept of species given by van der Goot (1981) is generally accepted. The genus *Chrysotoxum* in Europe is represented by 20 species; 12 of them are present in Macedonia and 9 species have been registered in the area of Sharr Mountains. The larvae of this genus feed on plant lice that live in the roots of plants and are associated with ants in the corridors.

37. *Chrysotoxum bicinctum* (Linnaeus, 1758)

Habitat type: Deciduous forests and wetlands; next to streams (including seasonal streams) in open-air forests; on meadows and wet *Molinia* pastures; along the river.

Adult: Adults reside by a stream; fly fast and low; males float along the length of the stream at a height of 2-3m; they rest on low-growing vegetation and bushes.

Host plant: White Umbelliferae; Umbelliferae; *Achillea ptarmica*, *Alisma plantago-aquatica*, *Carduus*, *Crataegus*, *Hypochoeris*, *Potentilla erecta*, *Ranunculus*, *Rubus*, *Heracleum sphondylium*,

Euphorbia sp., *Pastinaca sativa*, *Malva sylvestris* and *Mentha* sp.

Flight period: End of May / September.

Larva: Not described but breed in laboratory conditions by feeding on aphids (Rotheray and Gilbert, 1989).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean, including North Africa; through Central and Southern Europe (Italy, former Yugoslavia, Bulgaria), in Turkey; through European and Asian parts of Russia to central Siberia. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: It is a rare species in Macedonia (Glumac, 1968).

Published findings: (Glumac, 1968: 874); (Krpač et al, 2001: 181-182).

Material: 10 specimens (4♂, 6♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, next to the lake, on a flower of *Heracleum sphondylium*, 1♀, August 30, 1959, (leg. Glumac); Mavrovi Anovi, next to a mountain stream, on the flower of *Pastinaca sativa*, *Malva sylvestris* and *Mentha* sp., 1♂, 2♀, August 01-03, 1961, (leg. Glumac) SKO; (Krpač et al, 2001): Mavrovi Anovi, in the community of ass. *Festuco heterophyllae-Fagetum* Em, 1♂, 2♀, 1520m.n.v., (leg. Krpač); Mavrovi Anovi, 1♂, June 19, 1964, (leg Čingovski); Mavrovi Anovi, 1♂, May 19, 1977, (leg Čingovski); Sharr Mountains, Tri Vodi, 1♀, August 30, 1990, (leg. Krpač), SKO.

Comment: It seems that this species is not rare in Macedonia, as stated in Glumac (1968). It is usually registered near water, but with individual specimens. It flies very fast.

38. *Chrysotoxum cautum* (Harris, 1776)

Habitat type: Deciduous forests and shrubs in pastures.

Adult: Adults live on open forest terrains or in bushes, on clearings in the forest and along forest paths; usually fly at altitudes up to 2m above the ground; resting on the leaves of shrubs.

Host plant: White Umbelliferae, yellow Compositae; *Allium ursinum*, *Caltha*, *Cornus*, *Crataegus*, *Euphorbia*, *Geranium*, *Plantago*, *Ranunculus*, *Rhamnus catharticus*, *Rubus*, *Sorbus aucuparia*, *Pastinaca sativa*, Alyssum sp. and *Orlaya* sp.

Flight period: May / July, and in southern Europe in April.

Larva: Not described (Speight, 2001).

Distribution: From Finland, in the south to the Pyrenees and Spain; in Ireland, it disappeared; It is found in Britain (southern England), and in the east through Central and Southern Europe (Italy, former Yugoslavia, Bulgaria, Greece), in Turkey and Russia all the way to Altai (Mongolia). (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.
Macedonia: Rare species (Glumac, 1968: 874).

Published findings: (Glumac, 1968: 874); (Krpač et al, 2001: 181-182).

Material: 2 specimens (1♂, 1♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, the valley of a mountain stream, on *Euphorbia* sp., 1♂, 30.05.1960, (leg. Glumac); (Krpač et al, 2001): Dolina r. Radike, Pilana, 1♀, 25.05.1995. (leg. Krpač) SKO.

Comment: In Macedonia, it is marked as a rare species (Glumac, 1968). Females of this species can be easily separated from females of other *Chrysotoxum* species, because only they have a longitudinal

medial membranous stripe on the sixth abdominal tergite, which divides it into two parts. (Speight, 2001).

39. *Chrysotoxum cisalpinum* Rondani, 1845

Habitat type: Dry Mountain pastures in the *Fagus* zone in the mountains of southern Europe and in thermophilic forests.

Adult: No data.

Host plant: *Smyrnium perfoliatum* and *Orlaya grandiflora*.

Flight period: The beginning of May / mid-June.

Larva: Not described (Speihgt, 2001).

Distribution: France (Paris Basin), south to the Mediterranean; from Spain in the east through southern Europe, the former Yugoslavia and Bulgaria to Tajikistan and Uzbekistan. (Speight, 2001).
Balkan Peninsula: The species is known only for Macedonia, Montenegro, and Greece.

Macedonia: This species is very rare in Macedonia (Glumac, 1968).

Published findings: (Krpač, 2006).

Material: 1 specimen (1♂). Mavrovo, v. Nichpur, 1♂, 10.05.1996, (leg. Krpač).

Comment: In Macedonia, this species is found single, in forest ecosystems near water. The species is not adequately separated in existing keys but can be distinguished from other genus species by the Séguy key (1961).

40. *Chrysotoxum elegans* Loew, 1841

sub *Chrysotoxum festivum* L. in Glumac, 1968 (in part); Krpač et al, 2001 (in part)

Habitat type: Deciduous mesophilic and thermophilic forests, dry bushy pastures, and wastelands.
Adult: Adults reside in forest clearings and along forest trails. They fly fast and have very low above-ground vegetation.

Host plant: White *Umbelliferae*; *Origanum*, *Ranunculus*, *Orlaya grandiflora*, *Pastinaca sativa*, *Heracleum sphondylium*, *Eryngium campestre*, *Crataegus monogyna*, *Euphorbia* sp., *Lapsona* sp., *Anthriscus* sp., *Chrysanthemum* sp. and *Verbascum* sp.

Flight period: May / August and very rarely in September.

Larva: It was described by Dusek and Laska (1962), who found it on pastures under rocks; it is certain to feed on aphids, probable aphids from plant roots (Speight, 2001).

Distribution: From Finland and Scandinavia in the south to the Iberian Peninsula and the Mediterranean; through Central and Southern Europe to the European part of Russia, all the way to the Caucasus and Turkey.

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings (Glumac, 1968: 874-875); (Krpač et al, 2001: 181-182).

Material: 11 specimens (5♂, 6♀).

Incorrect literature data: sub. *C. festivum* (Glumac, 1968).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, next to the lake, on a flower of *Heracleum sphondylium*, 2♀, 30.08.1959, (leg. Glumac); SKO; Krpač et al, 2001): Mavrovo, village of Nichpur,

1♀, July 26, 1994, (leg. Krpač); Mavrovi Anovi, 1♂, July 6, 1995, (leg. Krpač); Mavrovo, Lukovo Pole, 1♂, 05.06.1996, (leg. Krpač) SKO.

sub. *Chrysotoxum festivum* L., in Glumac (1968) (in part): Tetovo, Staro Selo, the valley of the stream, on *Euphorbia* sp., 1♂, 1♀, May 28, 1960, (leg. et det. Glumac), the valley of the river Radika, on the leaves of *Pastinaca sativa*, 1♀, August 29, 1961, (leg. Glumac); Mavrovi Anovi, 1♀, June 03, 1972, (leg. Čingovski); Mavrovi Anovi, 1♂, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 1♂, June 22, 1997, (leg. Krpač), SKO.

Comment: It is a regular and common species in Macedonia, but it occurs with individual specimens. It has been registered at numerous localities and in various biotopes. There is more ambiguity in the separation of *C. elegans* from other species of the genus *Chrysotoxum*, and this is reflected in the data on species distribution. More detailed information on the extent of intraspecific variability of this species is needed. Some believe that such data can be obtained by growing individuals in the laboratory, but such experiments have not yet been done (Speight, 2001).

41. *Chrysotoxum fasciolatum* (de Geer, 1776)

Habitat type: Forests and landscapes with lush vegetation; the humid forests of *Fagus* and *Picea*, and at higher altitudes above the zone of *Abies* and *Picea*; alpine pastures.

Adult: There are found adults on forest clearings and along forest paths and in open spaces at higher altitudes; they fly fast up to 2m above the ground.

Host plant: *Adenostyles*; *Ranunculus*, *Rubus ideus*, *Taraxacum*.

Flight period: May / July.

Larva: Not described.

Distribution: Finland and Scandinavia, mountain ranges in Poland and Germany, south to France (Vosges, Massif Central); in the east through northern Europe (Baltic states, Russia) in Siberia all the way to the Pacific and Japan; from the Vosges in the east across the Alps (including the northern parts of Italy and the former Yugoslavia) to Bulgaria, Ukraine and the Caucasus. Peck (1988) cites North America as part of the range of this species, while Vockeroth (1992) reports that *C. fasciolatum* is not present in America (Speight, 2004).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: In Macedonia, it was recorded in only two localities.

Published findings: (Krpač et al, 2001: 171).

Material: 4 specimens (3♂, 1♀) SKO.

Verified literature data: (Krpač et al, 2001): Sharr Mountain, Popova Šapka, 1♀, 25-26.07.1958, (leg. S. Joksimović); Mavrovi Anovi, 3♂, 06.06.1996. (leg. Krpač) SKO.

Comment: *C. fasciolatum* is a forest species registered at higher altitudes. Although it is quite widespread and has been recorded on the entire Balkan Peninsula. In Macedonia, it has been found in only two localities with few specimens. *C. fasciolatum* is like the "mother" species of the genera *Vespula* and *Dolichovespula*.

42. *Chrysotoxum festivum* (Linnaeus, 1758)

Habitat type: Forests; open spaces (clearings, road edges, etc.) in deciduous forests and thickets; uncultivated meadows with bushes.

Adult: Individuals stay on leaves and glades for food. Males hover at a height of 2-4m; they fly fast through bushes and shrubs.

Host plant: White Umbelliferae; *Calluna, Chaerophyllum, Chrysanthemum* sp., *Cirsium arvense, Crateagus monogyna*, *Eryngium* sp., *Euphorbia, Galium, Hieracium, Hypochoeris, Lapsona* sp.,

Narthecium, Origanum, Potentilla erecta, Ranunculus, Rosa rugosa, Rubus idaeus, Sambucus nigra, Senecio, Solidago canadensis, S. virgaurea. Tanacetum sp. (Glumac, 1968: 875; Speight, 2001).

Flight period: May / September, with peaks in June and August.

Larva: Speight found a mature larva in association with the ant species *Lasius niger*, under a rock in the *Corylus* / *Prunus* bush on old pasture (Speight, 2001).

Distribution: Finland and Scandinavia, south to the Iberian Peninsula and the Mediterranean, including North Africa; from Ireland east through much of Europe to Turkey and the European part of Russia; across Siberia to the Pacific coast; Japan; northern India. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968: 875).

Material: 20 specimens (6♂, 14♀).

Verified literature data: (Glumac, 1968): Tetovo, Staro Selo, dolina potoka, on *Euphorbia* sp., 2♀, May 28, 1960, (leg. Glumac); Mavrovi Anovi, forest, on a flower *Tanacetum* sp., 2♂, 1♀, August 01-031961, (leg. Glumac); Sharr Mountains, 1♀, September 02, 1960, (leg. T. Petkovski); Mavrovi Anovi, forest, shrubs, on *Daucus* sp., *Tanacetum* sp. and *Mentha* sp., 1♀, August 01-03, 1961, (leg. Glumac);

New findings: Mavrovi Anovi, 1♂, 15.06.1972, (leg. Čingovski); Mavrovo, 1♀, June 22, 1975, (leg. Chingovski); Mavrovi Anovi, 2♂, 2♀, July 2, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, 2♀, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, May 19, 1977, (leg. Čingovski); Sharr Mountains, 2♀, May 26, 1990, (leg. T. Ivanovski); Mavrovi Anovi, 1♀, July 9, 1991, (leg. T. Ivanovski), SKO.

Comment: This species is mostly found at altitudes above 1000m. Some authors confuse it with other species of the genus *Chrysotoxum*. *C. festivum* until 1982 was known by this name. Thompson et al, (1982) based on a revision of Linnaeus' collection suggest a new name for this species, *C. arcuatum*. To preserve the stability of the nomenclature, Iliff and Chandler (2000) designate a neotype of a species as taxa used until 1982 under the name *C. festivum*, making this name valid again in the future taxonomic literature.

43. *Chrysotoxum lessonae* Giglio Tos, 1890

Distribution: Belgium, Germany, Poland, Czechoslovakia, France, Switzerland, Hungary, Romania, Portugal, Spain, Italy, Russia from the southern European part through the Transcaucasia, Kazakhstan to the Central Asian part (Peck, 1988).

Balkan Peninsula: Serbia, Montenegro, Bulgaria, Albania, Macedonia, and Greece.

Macedonia: Registered in a small number of localities.

Published findings: (Krpač, 2006).

Material: 4 specimens (4♀) SKO.

New findings: r. Radika, 1♀, June 10, 1959, (leg. Glumac); Mavrovi Anovi, 1♀, August 30, 1969, (leg. Glumac); r. Radika, Lukovo Pole, 1♀, May 25, 1995, (leg. Krpač); r. Radika, Pilana, 1♀, May 25, 1995. (leg. Krpač).

Comment: This species is very similar to *C. intermedium*. The difference is that *C. lessonae* has Central European distribution. Sommaggio (2001) indicates that the species *C. affinis*, which was considered a variety of the species *C. lesonae*, is in fact a younger synonym of the species *C. intermedium*.

44. *Chrysotoxum octomaculatum* Curtis, 1837

sub. *Chrysotoxum verralli* (Collin, 1940) in Krpač et al, 2001

Habitat type: forests and open spaces; near dry bushes on pastures and in deciduous and coniferous forests.

Adult: Adults of males' hover at a height of 3-5m, and rest on the leaves of trees at height of over 2m. They fly very fast above the ground vegetation and above the bare ground. During the great heat, they are supplied with water by going around forest streams.

Host plant: White Umbelliferae; *Erica*, *Heracleum sphondylum*, *Mentha* sp., *Eryngium* sp., *Lapsona* sp., *Chrysanthemum* sp., *Anthriscus sylvestris*, *Rubus ideus*, *Rannunculus* sp. and *Euphorbia* sp.

Flight period: May / June and September.

Larva: Not described (Speight, 2001).

Distribution: From Britain (southern England) and the Netherlands, in the south to the Mediterranean, and in the east through central and southern Europe, in the southern parts of Russia, to Armenia and Kazakhstan (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: (Glumac, 1968) and (Krpač et al, 2001a:181-182).

Material: 3 specimens (3♀) SKO.

Verified literature data: (Glumac, 1968: 875): Mavrovi Anovi, by the lake, on a flower of *Heracleum sphondylum*, 2♀, August 30, 1959, (leg. Glumac); the valley of the river Radika, on the flower of *Mentha* sp., 1♀, August 30, 1959, (leg. Glumac); SKO.

Comment: The species can often be mixed with the related species *C. verralli*.

45. *Chrysotoxum vernale* Loew, 1841

Habitat type: Forests *Betula*, *Fagus*, *Genista florida*, *Quercus pyrinaica* and maquis; in the bush, on a well-drained surface and on mountain and alpine pastures up to 2500 m above sea level.
Adult: Adults fly fast and low above ground vegetation. Males hover at a height of up to 4m above the ground, in sparse forests and on pastures.

Host plant: White Umbelliferae; *Caltha*, *Crataegus* (*C. monogyna*), *Euphorbia*, *Helianthemum*, *Sorbus*, *Valeriana*, *Orlaya grandiflora*, *Pastinaca sativa*, *Lepidium draba*, *Heracleum* sp., *Lapsona* sp., *Chrysanthemum* sp., *Anthriscus* sp., *Daucus* sp., *Tanacetum* sp., *Malva* sp. and Mentha sp.

Flight period: May / June, and at higher altitudes in late June / early August.

Larva: Not described, but it has been observed that females lay eggs at the entrance of *Lasius flavus* anthills, on pastures.

Distribution: From Finland and Scandinavia, in the south to the Pyrenees; from Britain (southern England), in the east through most of Europe, Asia almost to the Pacific and in Iran (Speight, 2001).
Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria and Greece.

Macedonia: Widespread species.

Published findings: (Glumac, 1968); (Krpač et al, 2001: 181-182).

Material: 12 specimens (4♂, 8♀).

Verified literature data: (Glumac, 1968: 876): Mavrovi Anovi, valley of a mountain stream, mixed forest, on *Euphorbia* sp., 2♂, 1♀, May 30, 1960, (leg. Glumac); Mavrovi Anovi, stream valley, on *Pastinaca* sp., *Daucus* sp., *Tanacetum* sp., *Malva* sp. and *Mentha* sp., 3♀, August 01-03, 1961, (leg.

Glumac); (Krpač et al, 2001): Mavrovi Anovi, in the community of ass. *Festuco heterophyllae-Fagetum* Em, 1520m (leg. Krpač); Sharr Mountain, Ljuboten, 1♀, June 28, 1955, (leg. Bogoevski); Mavrovi Anovi, 1300m.n.v., 1♀, June 21, 1964, (leg. Čingovski); Mavrovi Anovi, 1♀, June 15, 1972, (leg. Čingovski); Mavrovi Anovi, 1♀, May 19, 1977, (leg. Čingovski); Mavrovi Anovi, 1♀, July 03, 1978, (leg. Čingovski); Mavrovi Anovi, 1♂, May 24, 1995, (leg. Krpač), SKO.

Comment: *C. vernale* is a widespread and common species throughout the Balkan Peninsula. It is registered at different altitudes and in different habitats, but with individual specimens. *C. vernale* is a variable species very close to *C. verralli* (Collin), 1940. Within the species itself, there is variability, which refers to the lateral margins of the abdomen, which may be partially yellow and thin, extending to the posterior margin of each segment. Existing keys indicate that the lateral margin is completely black. Mountainous and northern European populations typically have a coastal portion of the wing membrane heavily darkened, and lowland and southern European populations have limited darkening that is observed as dark scattered dots (Speight, 2001).

Genus *Dasysyrphus* Enderlein, 1938

The genus *Dasysyrphus* is represented in Europe by 10 species (Speight, 2001). In addition to already identified 8 species (Peck, 1988), Bicik and Laska (1996) and Doczkal (1996a) added 2 more species. A revision of species of this genus is needed to avoid confusion and nomenclature problems that arise during determination. 7 species have been registered in Macedonia: *D. albostriatus* (Fallen, 1817); *D. friuliensis* (van der Goot, 1960); *D. pauxillus* (Williston, 1887); *D. pinastri* (De Geer, 1776) sensu Doczkal (1996a); *D. postclaviger* (Stys et Moucha, 1962); *D. tricinctus* (Fallen, 1817) and *D. venustus* (Meigen, 1822). 5 species have been confirmed on Sharr Mountains. The larvae of the genus *Dasysyrphus* feeds on aphids.

46. *Dasysyrphus albostriatus* (Fallen, 1817)
Syrphus albostriatus Fallen, 1817 in Glumac, 1968

Habitat type: Deciduous and coniferous forests up to the lower border of the alpine zone.

Adult: Adults are found next to forest paths and clearings or float 2-3m above the ground in the treetops; resting on the leaves of trees and shrubs; in the evening they take shelter in shady places between the branches of bushes.

Host plant: Yellow Compositae; white Umbelliferae; *Acer pseudoplatanus*, *Calluna*, *Crataegus*, *Euphorbia*, *Lonicera xylosteum*, *Papaver*, *Ranunculus*, *Rubus*, *Salix*, *Sorbus*, *Stellaria*, *Succisa pratensi*, *Viburnum opulus*, *Anthriscus* sp., *Euphorbia* sp., *Verbascum* sp., *Eryngium campestre* and *Orlaya grandiflora*.

Flight period: Late April (early April in southern Europe) / September and very rarely in October.

Larva: Described by Dusek and Laska (1962), and Goeldlin (1974); they feed primarily on aphids but are also apparently predators of a wide range of soft-bodied insects. According to Goeldlin (1974), larvae make obstacles on the branches of trees in the shape of rings. Kula (1982) reports that larvae of this species are found mainly in the canopy of spruce (*Picea*) trees.

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland in the east, through Central and Southern Europe (Italy, former Yugoslavia), to Crete, Turkey and the European part of Russia (from the north to the Crimea and the Caucasus); in Central Asia to Tuva and Japan. This species is a migrant (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: As *S. albostriatus* in Glumac (1968: 870); (Krpač et al, 2001: 181-182).

Material: 7 specimens (4♂, 3♀).

Verified literature data: as *S. albostriatus* (Glumac, 1968): Mavrovi Anovi, spruce forest, 1♂, August 30, 1959, (leg. Glumac); Valley of the river Radika, on leaves, 1♀, May 31, 1960, (leg. Glumac); Valley of the river Radika, on the flower of *Verbascum* sp., 1♂, August 28, 1966, (leg. Glumac); (Krpač et al, 2001): Mavrovi Anovi, 1♀, July 26, 1994, (leg. Krpač); Mavrovo, s. Nichpur, 1♂, May 10, 1996, (leg. Krpač); Mavrovi Anovi, 1♂, July 10, 1998, (leg. Krpač); Sharr Mountains, Tri Vodi, 1♀, August 30, 1990, (leg. Krpač), SKO.

Comment: *D. albostriatus* is a registered migrant throughout Europe. It is also widespread in Asia. The species is registered throughout the Balkan Peninsula. It is a common, widespread, and common species in Macedonia. *D. albostriatus* is close to the species *D. eggeri* from which it can be separated, without difficulty, according to certain characteristics (Speight, 2001).

47. *Dasysyrphus pinastri* (De Geer, 1776) sensu Doczkal (1996a)

Habitat type: Coniferous forests (*Abies*, *Picea* and *Pinus*) and coniferous plantations; mountain forests of *Betula*.

Adult: Adults float in the treetops and descend only to visit the flowers.

Host plant: *Caltha*; *Crataegus*, *Crepis paludosa*, *Euphorbia, Fragaria, Frangula alnus, Galium, Heracleum, Hieracium, Lonicera xylosteum, Prunus spinosa, Ranunculus, Rosa rugosa, Salix repens, Sorbus aucuparia, Stellaria.*

Flight period: April / June and July / beginning of August at higher altitudes and in a northern latitude.
Larva: Described by Nielsen et al (1954); it feeds on aphids. Kula (1982) states that the larva of this species overwinters on the soil of the spruce forest (*Picea*) between the bent leaves.
Distribution: Greenland, Iceland and from Finland and Scandinavia, in the south to the Pyrenees; from Ireland, in the east through northern and central Europe (mountainous parts of northern Italy and the former Yugoslavia), in Turkey and the European part of Russia; across Siberia from the Urals to Yakutia (Speight, 2001).

Balkan Peninsula: Croatia, Montenegro, Macedonia, Bulgaria, and Greece.

Macedonia: It was found in several locations in Macedonia.

Published findings: (Krpač et al, 2001: 181-182).

Material: 3 specimens (3♂) SKO.

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, in ass. *Orno-Quercetum petreae,* 1♂, 10.05.1996, (leg. Krpač); the canyon of the river Radika, in ass. *Orno-Quercetum petreae,* 1♂, 06.06.1996, (leg. Krpač).

New findings: Mavrovi Anovi, meadow, on *Euphorbia* sp., 1♂, 17.05.2003, (leg. Krpač).
Comment: *D. pinastri* was found on high mountain meadows in the canyon of Radika river. In some authors, *D. pinastri* is referred to as *D. lunulatus*. Goeldlin (1974) redefined the species and marked it with a lectotype. Vockeroth (1986, 1992) disputed the identity of the lectotype of *D. lunulatus*, referring to the manuscript of Thompson and Nielsen who claimed that *D. lunulatus* was synonymous with *D. venustus* and suggested that the name *D. pinastri* (De Geer) can be used for *D lunulatus*. Unfortunately, there is no neotyping labeled as *D. pinastri*. Vockeroth (1986) defined his concept of this species only

based on definitions given by Coe (1953) and van der Goot (1981), who did not adequately separate *D. lunulatus* from the taxa *D. lenensis* (Bag.) and *D. nigricornis* Verrall) (Speight, 2001).

48. *Dasysyrphus postclaviger* (Stys et Moucha, 1962)

Habitat type: Forests; coniferous forests to the upper limit of the *Picea* forest zone, and across the *Larix* and *Pinus cembra* zones, all the way to 2200m, in the Alps.

Adult: Adults of male's hover at a height of 1.5-5m and rest on a *Larix* tree in the sun.

Host plant: Yellow Compositae.

Flight period: (May) June / beginning of July.

Larva: Not described (Speight, 2001).

Distribution: Northern Europe and central parts of the Alps (Switzerland, Liechtenstein, Austria).

Balkan Peninsula: Montenegro, Serbia (unpublished, Šimić et al, 2001- check list).

Macedonia: The species is rare in Macedonia and has not been registered so far.

Material: 1 specimen (1♂).

New findings: Mavrovi Anovi, 1♂, May 24, 1995, (leg. Krpač), SKO.

Comment: *D. postclaviger* is a mountain species. According to available data, its range is not entirely clear, due to inadequate separation from related species *D. friuliensis* (van der Goot) and *D. hilaris* (Zetterstedt) (Speight, 2001). It has been recorded on the Balkan Peninsula in Macedonia (where it is not such a rare species), Montenegro and Serbia (unpublished, Šimić et al, 2001- check list).

49. *Dasysyrphus tricinctus* (Fallen, 1817)

Syrphus tricinctus (Fallen, 1817) in Glumac, 1968

Habitat type: Deciduous and coniferous forests and coniferous plantations; specially planted *Picea* and parts of the *Betula* forest in sheltered places.

Adult: Adults inhabit forest paths and clearings; they primarily reside in the treetops and descend only to visit the flowers of low-growing plants.

Host plant: Yellow Compositae; white Umbelliferae; *Calluna*, *Campanula*, *Convolvulus*, *Cornus*, *Euphorbia*, *Geranium*, *Parnassia*, *Plantago*, *Pulygonum*, *Ranunculus*, *Sedum*, *Sorbus*, *Stellaria*, *Succisa*, *Valeriana*.

Flight period: April / October and April / May (in Belgium) or May / June (in Ireland) and lower in August and September.

Larva: Described by Dixon (1960). The larva has been observed as a predator of Cerambycidae larvae in the *Picea* forest and Lepidoptera larvae in deciduous forests (Gabler, 1938; Friederichs et al, 1940).

Distribution From Iceland, in the south to the Pyrenees and northern Spain; from Ireland, Finland, and Scandinavia, in the east through much of central and northern Europe, in Russia all the way to the Pacific coast and Japan (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria.

Macedonia: It is a regular and common species in Macedonia.

Published findings: as *S. tricinctus* in Glumac (1968: 871).

Material: 3 specimens (1♂, 2♀).

Verified literature data: as *S. tricinctus* in Glumac (1968): Mavrovi Anovi, stream valley, on a bush, 1♀, August 27, 1966, (leg. Glumac); Sharr Mountains, Popova Šapka, 1♀, July 15-18, 1958, (leg. S. Joksimović); r. Radika, Lukovo Pole, 1♂, September 06, 1994, (leg. Krpač), SKO.

Comment: This species is registered in the entire Balkan Peninsula and inhabits mainly forest habitats. According to Glumac (1968), it is not a very rare species in Macedonia, it has been registered at several localities and at higher altitudes, but with individual specimens.

50. ***Dasysyrphus venustus* (Meigen, 1822)**
Syrphus venustus Meigen, 1822 in Glumac, 1968

sub. *Syrphus arcuatus* Fallen, 1817 in Glumac, 1968

Habitat type: Wet forests of *Fagus*, acidophilic *Quercus*, *Betula*; alluvial moist forests, *Pinus*, *Picea*, *Abies* and coniferous plantations.

Adult: Adults reside along forest paths and clearings; primarily in the treetops, they go down just to visit the flowers, or to "play" in the early evening sun.

Host plant: *Acer platanoides*; *Acer pseudoplatanus*, *Allium ursinum*, *Berberis*, *Caltha*, *Crataegus*, *Endymion*, *Euphorbia*, *Frangula alnus*, *Ilex*, *Lonicera xylosteum*, *Potentilla erecta*, *Prunus cerasus*, *P. spinosa*, *Ranunculus*, *Rubus idaeus*, *Salix*, *Sambucus*, *Sorbus aucuparia*, *Stellaria*, *Taraxacum*.

Flight period: April / June and July at higher altitudes and northern latitudes.

Larva: Described by Dusek and Laska (1962); it feeds on aphids from trees and shrubs (Speight, 2001).
Distribution: From Finland and Scandinavia, south to the Pyrenees and northern Spain; from Ireland, in the east through the northern, central and mountainous parts of southern Europe (Italy, former Yugoslavia), to the European part of Russia; from Siberia to the Pacific coast (Kuril Islands); in North America from Alaska to Quebec and Oregon (Speight, 2001).

Balkan Peninsula: Croatia, Serbia, Montenegro, Macedonia, Bulgaria, and Greece.

Macedonia: It is a very rare species in Macedonia (Glumac, 1968).

Published findings: as *S. venustus* Meigen, 1822 (Glumac, 1968: 871); (Krpač et al, 2001: 181-182).
Material: 8 specimens (4♂, 4♀).

Incorrect literature data: as *S. arcuatus* in Glumac (1968: 870): Mavrovi Anovi, mixed forest, on *Euphorbia* sp., 1♀, May 30, 1960, (leg. Glumac) SKO. (= *D. venustus*).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, in ass. *Festuco heterophyllae Fagetum*, 1♀, May 25, 1995, (leg. Krpač), Mavrovi Anovi, 2♂, May 23, 1995, (leg. Krpač); Mavrovi Anovi, 2♂, 1♀, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 1♀, May 25, 1995, (leg. Krpač); SKO.

Comment: This is a species of very wide range, most common in forest ecosystems. In Macedonia, it was recorded only in two localities and in a small number of specimens. However, our research showed that it is species that is not as rare as stated by Glumac (1968). By revising the material from the collection of the SKO museum, we found that the specimens belong to *S. arcuatus*, and published in Glumac (1968), refer to *D. venustus*. Today's concept of this species is confusing and temporary. As the revision is ongoing, it is expected to clarify the status of this taxa and provide an adequate basis for distinguishing it from related species, some of which are now unrecognizable in the literature (Speight, 2001).

Genus *Didea* Macquart, 1834

According to the authors van der Goot (1981), Stubbs and Falk (1983) and Verlinden (1991), this genus in Europe includes three species, of which only one *Didea fasciata* Macquart, 1834, is present in Macedonia and in Sharr Mountains. Larvae of this genus feed on aphids.

51. *Didea fasciata* Macquart, 1834

Habitat type: Forests; several types of deciduous and coniferous forests; coniferous plantations.

Adult: Adults reside along forest paths and clearings; they fly fast, usually around the leaves of trees; males patrol between the branches of flowering trees.

Host plant: White Umbelliferae; *Arbutus unedo*, *Chaerophyllum*, *Crataegus*, *Galium*, *Hedera*, *Hypochoeris*, *Polygonum cuspidatum*, *Rubus fruticosus*, *R. idaeus*, *Sambucus*, *Urtica dioica*, *Viburnum opulus*, *Anthriscus sylvestris*, *Spiraea* sp. and *Pastinaca sativa*.

Flight period: May / September and less often in October.

Larva: Is aphidophagous and was described by Heiss (1938); found in coniferous and deciduous forests. Laska and Stary (1980) provided data on larval biology.

Distribution: From Finland and Scandinavia, in the south to the Pyrenees and Spain; Italy and Greece; from Ireland, east across Eurasia to the Pacific coast; in North America, from British Columbia, in the south to New Mexico, and in the east to New York; in the Oriental region from northern India to Formosa (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a rare species in Macedonia.

Published findings: (Glumac, 1968: 873); (Krpač et al, 2001: 181-182).

Material: 2 specimens (1♂, 1♀).

Verified literature data: (Glumac, 1968): valley of the river Radika, shrubs, on the flower of *Pastinaca sativa*, 1♀, August 29, 1961, (leg. Glumac) SKO; (Krpač et al, 2001): Mavrovi Anovi and Lukovo Pole; Mavrovi Anovi, 1♂, June 06, 1995, (leg. Krpač), SKO.

Comment: *D. fasciata* is widespread in the Balkan Peninsula. According to Glumac (1968), this species is marked as rare in Macedonia. Our research has shown that this is a species that has not been sufficiently researched.

Genus *Epistrophe* Walker, 1852

Peck (1988) lists 11 species for Europe, of which *Epistrophe helvetica* Sack has been proven to be synonymous with *Parasyrphus nigritarsis* (Zett.). The species *E. monticola* Becker later became synonymous with *P. punctulatus* (Verall), while *E. euchroma* was classified in a special genus *Epistrophella*. Doczkal and Schmid (1994) made a partial revision of European species of the genus *Epistrophe* to which two species: *E. melanostomoides* (Strobl) and *E. ochrostoma* (Zetterstedt) were mistakenly attached. Four species have been identified in Macedonia: *E. diaphana* (Zetterstedt, 1843); *E. eligans* (Harris, 1780); *E. grossulariae* (Meigen, 1822) and *E. nitidicollis* (Meigen, 1822). 3 species have been registered on Sharr Mountains. The larvae of the genus *Epistrophe* are distinct carnivores; they feed on aphids.

52. *Epistrophe diaphana* (Zetterstedt, 1843)

Habitat type: Wetlands and forests; rivers and streams in deciduous forests and on mountain pastures. **Adult:** Adults meet along the banks of streams; they fly between the thick undergrowth and on the clearings. Males hover at 2-4m in height on small clearings.

Host plant: White Umbelliferae; *Senecio* sp. and *Pastinaca sativa*.

Flight period: May / August (most massive in July) and in September in southern Europe.

Larva: Not described (Speight, 2001).

Distribution: From Sweden, south to the Pyrenees and Spain; from Britain (southern England), in the east through Central and Southern Europe, in Russia; and further in Asia to the Pacific coast (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, and Macedonia.

Macedonia: It is a rare species in Macedonia.

Published findings: (Glumac, 1968: 873).

Material: 1 specimen (1♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, the valley of a stream, meadow, on the flower of *Pastinaca sativa*, 1♀, 03.08.1961, (leg. Et det. Glumac), SKO.

Comment: In Macedonia, *E. diaphana* was found in only one locality.

53. *Epistrophe eligans* (Harris, 1780)
syn. *Epistrophe bifasciata* (Fabricius, 1794) in Glumac, 1968

Habitat type: Several types of deciduous forests and shrubs; in the gardens of suburban settlements. **Adult:** Adults reside on paths and clearings; they fly around the leaves of trees; males hover next to large trees at 2-6m above the ground.

Host plant: White Umbelliferae; *Acer pseudoplatanus*, *Cistus*, *Crataegus* (*C. monogyna*) *Endymion*, *Euonymus*, *Ilex*, *Prunus spinosa*, *Sellaria*, *Viburnum opulus*, *Alyssum* sp. and *Euphorbia helioscopia*.

Flight period: April / June, and in southern Europe in March / early July.

Larva: Described by Goeldlin (1974); eggs were described by Chandler (1968); larvae feed on aphids; they are widespread on trees, shrubs, on *Euonymus*, *Malus*, *Prunus*, *Quercus*, and *Sambucus*; they are also found on *Rubus fruticosus* as well as on plants e.g., *Arundo*, and some cultures, such as *Foeniculum* and *Vicia* (Speight, 2001).

Distribution: From southern Sweden to the Iberian Peninsula, and from Ireland, in the east through Central and Southern Europe, in Turkey and the European part of Russia, all the way to the Caucasus (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Glumac (1968) it is stated that this species is very rare in Macedonia.

Published findings: as *E. bifasciata* (Fabricius, 1794) in Glumac (1968: 872).

Material: 5 specimens (5♂).

Verified literature data: as *E. bifasciata* (Glumac, 1968).

Other findings: Mavrovi Anovi, on *Euphorbia helioscopia*, 1♂, May 25, 1995, (leg. Krpač); upper course of the river Radika, Lukovo Pole, 1♂, May 25, 1995, (leg. Krpač); Mavrovo, the valley of the river Radika, Pilana, 3♂, May 10, 1996, (leg. Krpač), SKO.

Comment: For Macedonia, the species is known by its synonym *E. bifasciata* (Fabricius, 1794). Until now, the species was registered only at the locality - Mavrovo, from where only one specimen of the female was collected. It is marked as a very rare species (Glumac, 1968). Our research has shown that the species is not rare but is insufficiently researched. *E. bifasciata* was found at several localities in Macedonia, but with individual specimens.

54. *Epistrophe nitidicollis* (Meigen, 1822)
Syrphus nitidicollis Meigen, 1822 in Glumac, 1968

Habitat type: Deciduous forests, shrubs and macchia.

Adult: Adults live in trees, they only come down to visit flowers.

Host plant: White Umbelliferae; *Caltha*, *Cistus*, *Euphorbia*, *Prunus*, *Ranunculus*, *Rubus*, *Heracleum sphondylium,* and *Pastinaca sativa*.

Flight period: May / June (April in southern Europe) and July, at higher altitudes and northern latitude.
Larva: A description of the larva was given by Dusek and Laska (1959) and Goeldlin (1974); larvae are aphidophagous; Laska and Stary (1980) described the biology of larvae found on *Euonymus*, *Malus*, *Prunus*, and *Sambucus*.

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through northern, central, and southern Europe (Italy, former Yugoslavia, Bulgaria), in Russia; across Siberia to the Pacific coast (Kamchatka, Sakhalin); in North America from Alaska, south to California and South Carolina (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Glumac, (1968) states that this species is very rare in Macedonia.

Published findings: (Glumac, 1968: 871).

Material: 3 specimens (2♂, 1♀).

Verified literature data: as *S. nitidicollis* in Glumac (1968).

New findings: Tetovo, Vata Bogunović, meadow, on the flower of *Heracleum sphondylium*, 1♀, June 7, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, May 17, 2003, (leg. Krpač), SKO.

Comment: The species is registered in Macedonia at a few localities at lower altitudes, with individual specimens. *E. nitidicollis* is close to the species *E. melanostoma* (Zett.). These two species can be separated from each other according to the extent to which their wings are covered with microtrichus (Speight, 1988).

Genus *Episyrphus* Matsumura et Adachi, 1917

Within the genus *Episyrphus*, only one species of *E. balteatus* (de Geer, 1776) has been recorded on the European continent. This species is cited by some authors as a species of the genus *Meliscaeva*. In Macedonia and the Sharr Mountains, *E. balteatus* is widespread. The larvae of the only species of the genus are aphidophagous.

55. *Episyrphus balteatus* (de Geer, 1776)
Epistrophe balteata Degeer, 1776 in Glumac, 1968

Habitat type: Present in almost all environments; ubiquist type.

Adult: Adults usually fly at altitudes up to 2m above the ground; males hover above forest paths at 4-5m height; highly migratory species.

Host plant: White and yellow flowers, from trees to low-growing plants, are also visited by pink flowers such as *Cirsium* and *Succisa*. In October and November, this species uses in the diet the nectar of the flowers *Arbutis unedo*, *Hedera* and *Viburnum tinus*.

Flight period: February / November, with overlapping generations; overwinters as an adult and can be found in hibernation in cavities or ivy. On sunny winter days, it can also be seen in summer; it is assumed that these are individuals that have been in hibernation. This species has been declared a migrant.

Larva: Described by several authors. The most significant description is Bhatia (1939); larvae are aphidophagous on low-growing plants including crops (*Beta*, *Lactuca*, *Solanum*, *Trifolium*, *Triticum*), shrubs (*Buddleja*, *Euonymus*, *Sambucus*) and trees. Kula (1982) noted that *Episyrphus balteatus* prefers aphid colonies located low among spruce leaves (*Picea*). Dusek and Laska (1974) described the biology of larvae, and Bombosch (1957) and Tanke (1976) described laboratory-derived cultures. Barkemeyer (1994) gave an extensive and comprehensive review of the literature for this species and its biology (Speight, 2001).

Distribution: from Finland and Scandinavia to the Mediterranean; Canary Islands, Azure and North Africa; from Ireland through Eurasia to the Pacific coast; south across the Oriental region to Sri Lanka and Australia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a very common and widespread species in Macedonia.

Published findings: as *E. balteata* Degeer, 1776 in Glumac (1968: 872); (Krpač et al, 2001: 182).

Material: 19 specimens (10♂, 9♀).

Verified literature data: as *E. balteata* in Glumac (1968): Tetovo, 1♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, June 09, 1959, (leg. Glumac); r. Radika, 1♂, June 09, 1959, (leg. Glumac); r. Radika, 1♀, May 31, 1960, (leg. Glumac); Mavrovi Anovi, 1♂, 2♀, August 03, 1961, (leg. Glumac); (Krpač et al, 2001); Mavrovi Anovi, 1♀, July19, 1970, (leg. Čingovski); Mavrovi Anovi, 1♂, July 09, 1991, (leg. Ivanovski); Mavrovi Anovi, 4♂, June 17, 1994, (leg. Krpač); Mavrovo, s. Nichpur, 1♂, May 1, 05.1996, (leg. Krpač); Gostivar, Vrutok, 1♀, October 7, 1997, (leg. Krpač); Mavrovi Anovi, 1♂, 2♀, O10, 1997, (leg. Krpač). SKO.

Comment: This is one of the most common species, widespread, with the most numerous populations, which can be found in different habitats, in all examined localities, at different altitudes and in different microclimatic conditions, during the spring to the late summer period. Individual specimens were also recorded on warmer winter days. Registered in all parts of the Sharr Mountains.

Genus *Eristalinus* Rondani, 1845

Genus *Eristalinus* includes 5 species in Europe from two subgenera (Peck, 1988). The subgenera *Eristalinus* and *Lathyrophtalmus* are often cited separately in the literature. Dirickx (1998) removes the species *E. quinquelineatus* (Fab.) From the European list, which is erroneously listed for Europe, and reduces the current list of the genus *Eristalinus* for Europe to 4 species. 3 species of this genus have been registered on the territory of Macedonia: *E. aeneus* (Scopoli, 1763); *E. megacephalus* (Rossi, 1794); and *E. sepulchralis* (Linnaeus, 1758). Only 1 species has been confirmed on Sharr Mountain. The larvae of this genus are related to the aquatic environment rich in organic material.

56. *Eristalinus sepulchralis* (Linnaeus, 1758)

Habitat type: Swamps and banks of rivers and lakes, next to polluted channels.

Adult: Adults fly low above-ground vegetation; they often rest on wet mud.

Host plant: White Umbelliferae; *Achillea millefolium*, *Allium*, *Armeria maritima*, *Bellis perennis*, *Bidens cernua*, *Caltha*, *Cochlearia danica*, *Crataegus*, *Euphorbia*, *Galium*, *Leontodon*, *Origanum vulgare*, *Potentilla erecta*, *Ranunculus*, *Rosa*, *Rubus*, *Taraxacum*, *Tussilago*, *Valeriana dioica* and *Xanthium strumarium.*

Flight period: Mid-April (March / October in southern Europe).

Larva: Described by Hartley (1961) from larvae collected from decaying lake vegetation.

Disrtribution: from Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean, including North Africa; from Ireland through most of Europe, in Turkey and the European part of Russia; across Siberia to the Pacific coast, Japan, China, and India (Speight, 2001).
Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: In Macedonia, it occurs in a small number of localities and with a smaller number, except in Dojran, where the number is higher.

Published findings: (Glumac, 1968: 848); (Krpač et al, 2001: 183).

Material: 3 specimens (1♂, 2♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, dolina potoka, shiblje, 1♀, August 27,1966, (leg. Glumac). (Krpač et al, 2001): Mavrovi Anovi, 1♂, 1♀, July 26, 1994, 1520m, in the community of ass. *Festuco heterophyllae-Fagetum* Em, (leg. Krpač) SKO.

Comment: This species is widespread on the Balkan Peninsula. In Macedonia, it is more numerous in the southern parts of the country.

Genus *Eristalis* Latreille, 1804

Genus *Eristalis* is widespread in the Palearctic, Nearctic and Oriental regions. Peck (1988) cites 46 species of *Eristalis* for the Palearctic. Adults of many species of this genus are very similar to bees (*Apis*) or bumblebees of the genera *Bombus* and *Psithyrus*, especially in patterns and hairy. Kanervo (1938) distinguishes several groups based on the structure of armature of the male genitalia and other morphological features. Holinka (1999) revises the species of the group *E. rupium* for the Czech Republic and the Slovak Republic and provides the key for Central European species. In any case, neither Kanervo nor Holinka studied all the necessary type of material. Many unresolved nomenclatural and taxonomic problems remain. Hippa et al, (2001) make a revision of the western Palearctic species of the genus *Eristalis*, which contains the key to diagnostic characters and the determination of 20 species. They set up new synonyms and different lectotypes and neotypes. So far, 11 species of the genus *Eristalis* are known for the Balkan Peninsula (Šimić and Vujić, 1990). Data on hoverflies species in Macedonia are presented in Glumac (1968). 8 species have been registered in Macedonia: *E. arbustorum* (Linnaeus, 1758); *E. interruptus* Poda, 1761; *E. lineata* (Harris, 1776); *E. pertinax* (Scopoli, 1763); *E. similis* (Fallen, 1817) and *E. tenax* (Linnaeus, 1758). The last revision of the collection of hoverflies in the Macedonian Museum of Natural History in Skopje revealed different and hitherto undescribed species, such as *E. tecta* Vujić, Radenković et Nielsen, 2004. 7 species were registered for

Sharr Mountains. Larvae of this genus are aquatic saprophages with a characteristically long respiratory system. They develop in an aquatic environment rich in decaying substances.

57. *Eristalis arbustorum* (Linnaeus, 1758)

Habitat type: Ubiquist; it is found in urban environments, parks, farms, and gardens; it also resides in swamps and alluvial young forests.

Adult: Adults fly 2-3m above the ground; they rest on low-growing vegetation; males often reside on the stems of flowering plants. The species is a migrant.

Host plant: They visit a wide range of flowers (de Buck, 1990).

Flight period: April / October (March in southern Europe).

Larva: Described by Hartley (1961); larvae are aquatic and subaquatic, found in shallow stagnant waters, in cow manure and fodder, traps, etc. (Speight, 2001).

Distribution: Palearctic region and North Africa; North America from Wisconsin to Labrador and south to Kansas and South Carolina; reaches the Oriental region of northern India. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is one of the most common and numerous species in Macedonia.

Published findings: (Glumac, 1968: 846); (Krpač et al, 2001: 183).

Material: 53 specimens (30♂, 23♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, 1♀, on 09.06.1959, (leg. Glumac); r. Radika, 2♂, 1♀, June 10, 1959, (leg. Glumac); r. Radika, 1♂, August 30, 1959, (leg. Glumac); Tetovo, Staro Selo, 1♂, June 07, 1959, (leg. Glumac); Tetovo, 1♂, 1♀, June 08, 1959, (leg. Glumac); Gostivar, 1♂, August 29, 1959, (leg. Glumac); Mavrovi Anovi, 1♀, August 30, 1959, (leg. Glumac); Mavrovi Anovi, 1♀, May 30, 1960, (leg. Glumac); r. Radika, 2♂, May 31, 1960, (leg. Glumac); Mavrovi Anovi, 2♂, 1♀, August 03, 1961, (leg. Glumac); Sharr Mountains, 1♀, August 28, 1961, (leg. Glumac); Mavrovi Anovi, 1♀, August 27, 1966, (leg. Glumac); (Krpač et al, 2001): Radika river valley, Pilana; valley of the river Radika, near the village of Trnica.

New findings: Tetovo, v. Tearce, 1♀, on July 22,1958, (leg. Joksimović); Mavrovi Anovi, 1♂, August 3-4, 1962, (leg. Čingovski); Mavrovi Anovi, 1♂, June 21, 1964, (leg. Čingovski); Tetovo, village of Vratnica, 1♀, July 21, 1971, (leg. Čingovski); Tetovo, village of Brvenica, 1♀, May 04, 1973, (leg. Čingovski); Mavrovi Anovi, 1♀, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 3♂, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 2♂, August 04, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, June 23, 1978, (leg. Topukova); Mavrovi Anovi, 1♀, June 17, 1988, (leg. Krpač); Mavrovi Anovi, 1♀, August 12, 1990, (leg. Krpač); Mavrovi Anovi, 1♂, July 05, 1991, (leg. Ivanovski); Mavrovi Anovi, 1♂, June 17, 1994, (leg. Krpač); Mavrovi Anovi, 1♂, 1♀, July 26, 1994, (leg. Krpač); r. Radika, Pilana, 1♀, September 06, 1994, (leg. Krpač); Mavrovi Anovi, 1♀, May 24, 1995, (leg. Krpač); Mavrovo, v. Nichpur, 1♂, 1♀, May 10, 1996, (leg. Krpač); Mavrovi Anovi, 1♂, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 2♂, 2♀, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 1♀, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 2♂, July 10, 1998, (leg. Krpač); Mavrovi Anovi, 2♂, July 10, 1998, (leg. Krpač); Mavrovi Anovi, meadow, on a flower *Euphorbia* sp., 1♀, May 17, 2003, (leg. Krpač); Mavrovo, Sawmill, 1♂, 1♀, August 11, 2004, (leg. Krpač), SKO.

Comment: This species is widespread on the Balkan Peninsula. It is one of the most common and numerous species in Macedonia. It is located at different habitat types and at different altitudes.

58. *Eristalis interrupta* (Poda, 1761)

syn. *Eristalis nemorum* auct. nec Linnaeus, 1758

syn. *Eristalis nemorum* Linnaeus, 1758 in Glumac, 1968

Habitat type: Wetlands / forests, river and stream banks, ponds, and sunny forest springs.

Adult: Adults reside near a spring; on swampy meadows and pastures; males are fast and noisy, flying between coastal vegetation, near flowering plants.

Host plant: Yellow Compositae; Umbelliferae; Ranunculaceae; *Cakile*, *Calluna vulgaris*, *Caltha*, *Cardamine, Cirsium*, *Crataegus*, *Eupatorium*, *Euphorbia*, *Malus*, *Menyanthes*, *Mentha*, *Parnassia*, *Prunus*, *Ranunculus*, *Rubus fruticosus* agg., *Salix*, *Sorbus*, *Succisa*.

Flight period: April / September.

Larva: Described by Hartley (1961), as aquatic and semi-aquatic in streams and ponds; in cow dung on muddy soil.

Distribution: From northern Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through Central Europe in Turkey and Russia and further in Asia and most of Siberia; Italy, former Yugoslavia; Japan; in North America from Quebec to Colorado (Speight, 2001).

Balkan Peninsula: as *E. nemorum*, Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Published findings as *E. nemorum* in Glumac (1968: 846).

Unverified literature data: as *E. nemorum* (Glumac, 1968): Mavrovi Anovi, valley of a stream, meadow, on the flower of *Pastinaca sativa*, 1♂, August 01-13, 1961, (leg. Glumac); Specimens of this species listed in Glumac (1968) have not been found in any of Glumac's collections.

Material: 2 specimens (2♂) SKO.

New findings: Mavrovi Anovi, 1♂, July 26, 1994, (leg. Krpač); Mavrovi Anovi, meadow, on *Euphorbia* sp., 1♂, May 17, 2003, (leg. Krpač).

Comment: None of the existing keys are reliable in distinguishing closely related species such as *E. alpina*, *E horticola*, *E. jugorum* and *E. rupium*. Kanervo (1938) gives drawings of male genital armatures of the European species *Eristalis*, which help to identify suspicious specimens of *E. interrupta*.

59. *Eristalis jugorum* Egger, 1858

Habitat type: Forests and running fresh water; streams in the forests of *Fagus* and *Picea*.

Adult: Adults fly along streams, forest paths and clearings near water; usually fly up to 3m above the ground; males often patrol next to the stems of coastal flowering plants.

Host plant: white Umbelliferae; *Chrysanthemum*, *Leucanthemum*, *Knautia*, *Polygonum*, *Rubus idaeus*, *Scabiosa*, *Sorbus aucuparia*, *Succisa*.

Flight period: May / July (August at higher altitudes).

Larva: Not described (Speight, 2001).

Distribution: From Poland, in the south to the Pyrenees and northern Spain; from Belgium (Ardennes), in the east through Central and Southern Europe (northern Italy, former Yugoslavia, Greece), to the European part of Russia to the Caucasus, in Turkey and Iran (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Bulgaria, and Greece.

Macedonia: The species was found on the territory of Macedonia at several localities.

Published findings: (Krpač, 2006).

Material: 2 specimens (1♂, 1♀).

New findings: Mavrovi Anovi, 1♀, June 22, 1975, (leg. Čingovski); Dolina r. Radika, Pilana, 1♂, September 06, 1994, (leg. Krpač), has a genital preparation in a bottle, SKO.

Comment: *E. jugorum* is a species collected from a locality in the mountains of Macedonia. At an

altitude above 650m, it occurs with individual specimens. In the existing keys for genus *Eristalis*, the species *E. jugorum* is not adequately separated from related species. Males can be distinguished from males of other related species of this genus based on a very dense tuft of thick (usually black) hairs, which completely cover the postero-lateral surface of the anterior femurs. These tufts are considerably thicker than the tufts on the dorsal surface of the posterior femurs in other species. Females of *E. jugorum* can be distinguished by the fact that the lower part of their face is unusually drawn; viewed from the side, the shortest distance between the eye and the middle of the upper edge of the mouth is shorter than the shortest distance between the eye and the front end of the lateral edge of the mouth. In females of related species, these two distances are equal, or the distance between the eye and the middle of the upper edge of the mouth is longer (Speight, 2001).

60. ***Eristalis lineata*** **(Harris, 1776)**
syn. *Eristalis horticola* auct. nec de Geer, 1776

syn. *Eristalis horticola* (de Geer, 1776) in Glumac, 1968

Habitat type: wetlands, coniferous and deciduous forests; next to forest streams and rivers.

Adult: Adults reside near water; they fly along the banks of rivers and lakes. They visit the flowers of coastal vegetation, resting on leaves.

Host plant: Compositae; Umbelliferae; Ranunculaceae; *Calluna vulgaris*, *Cardamine*, *Cirsium*, *Crataegus*, *Eupatorium*, *Galium*, *Jasione*, *Pyrus communus*, *Rubus fruticosus*, *R. idaeus*, *Sambucus*, *Sorbus aucuparia*, *Stellaria*, *Succisa*, *Viburnum opulus*, *Daucus carota* and *Roripa* sp.

Flight period: Late of May / mid-September, and April in southern Europe.

Larva: Described by Dolezil (1972).

Distribution: From Finland and Scandinavia, in the south to North Africa; from Ireland, in the east through most of Europe and Russia to Siberia and the Pacific coast (Sakhalin); India (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: A rare species, collected in only two localities.

Material: 3 specimens (1♂, 2♀).

Published findings: as *E. horticola* in Glumac (1968: 846). Sharr Mountains, stream valley, on *Roripa* sp., 1♀, May 28,1960; Mavrovi Anovi, forest, on a glade, on a flower *Daucus carota*, 1♂, 1♀, August 01-02, 1961, (leg. Glumac), SKO.

Comment: This species has been recorded as rare in Macedonia, under its synonym *E. horticola* (Glumac, 1968). It is found in the mountainous areas of Macedonia.

61. ***Eristalis pertinax*** **(Scopoli, 1763)**
Habitat type: Forests and wetlands; alluvial forests, forest streams, near lakes, in urban areas, on farms, in gardens and parks.

Adult: Adults fly around bushes and shrubs; they often rest on the ground by streams and channels. Males hover above forest paths at 1-4m above the ground; they spend most of their time on flowers.

Host plant: They visit the flowers of a wide range of low-growing plants, bushes, shrubs, and trees (de Buck, 1990).

Flight period: February / November.

Larva: Described by Hartley (1961), from larvae collected from drainage ditches on a farm, and in wet manure and rot in a pond.

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean; from Ireland through most of Europe, to the European part of Russia, in Turkey; it does not seem to be known beyond the Urals.

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Published findings (Glumac, 1968: 846).

Unverified literature data: (Glumac, 1968):

Material: 8 specimens (4♂, 4♀) SKO.

Published findings: Mavrovi Anovi, the valley of the stream, on *Pastinaca sativa*, 2♂, 1♀, August 01-03, 1961, (leg. Glumac) in Glumac (1968).

New findings: Mavrovi Anovi, meadow, 1♀, June 26, 1991, (leg. Krpač); r. Radika, 1♀, June 07, 1996., (leg. Krpač); r. Radika, 2♂, 1♀, July 11, 1998., (leg. Krpač).

Comment: *E. pertinax* (Scopoli) is considered a rare species in Macedonia (Glumac, 1968). Our research has shown that the species is found in smaller populations but often, in almost all forest habitats up to 1500m above sea level. *E. pertinax* is a species that is morphologically like *E. similis* (Fal.) (Speight, 1988).

62. *Eristalis similis* (Fallen, 1817)
syn. *Eristalis pratorum* Meigen, 1822 in Glumac, 1968

Habitat type: Old deciduous forests of *Fagus* and *Quercus*; Mediterranean evergreen forests (*Quercus ilex* and *Q. suber*); coniferous forests (*Pinus*).

Adult: Adults of males' hover at 2-4m altitude, above forest paths; both sexes reside on sunny forest trees. Females can be seen exploring puddles and mud next to fallen trees and along streams.

Host plant: *Angelica*, *Buxus*, *Chaerophyllum*, *Convolvulus*, *Crataegus*, *Euonymus*, *Hypericum*, *Mentha aquatica*, *Parnassia*, *Ranunculus*, *Salix*, *Sambucus ebulus*, *Sorbus aria*, *Euphorbia helioscopia*, *Verbascum* sp., *Anthemis* sp. and Ranunculus sp.

Flight period: Mid-March, February in November in southern Europe.

Larva: Not described, but Maibach (1993) observed that females lay eggs in shallow waters (5 cm deep) in which there are rotten trees and leaves, and on the edges of forests.

Distribution: From Finland, in the south to the Mediterranean (including islands such as Crete); North Africa; from Britain (central England), in the east through the central and southern Europe of the former Yugoslavia, through Turkey, to the European part of Russia and in Asia. (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: There is a numerous and common species in Macedonia, known as *E. pratorum*.

Published findings: (Glumac, 1968: 846).

Material: 8 specimens (4♂, 4♀).

Verified literature: as *Eristalis pratorum* in Glumac (1968): Sharr Mountains; Mavrovi Anovi, IBNS.

New findings: Mavrovi Anovi, 1♂, August 03-04, 1962, (leg. Čingovski); Mavrovi Anovi, 1♀, July 03, 1978, (leg. Čingovski); Mavrovi Anovi, 1♀, June 04, 1982, (leg. Čingovski); Mavrovi Anovi, 1♂, July

18, 1988, (leg. Topukova); Sharr Mountains, Tri Vodi, 1♀, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♂, July 26, 1994, (leg. Krpač); the valley of the river Radika, Pilana, 1♂, September 06, 1994, (leg. Krpač); Mavrovi Anovi, 1♀, June 06,1996, (leg. Krpač), SKO.

Comment: This species is registered in all parts of the Balkan Peninsula. In Macedonia it was published under the name *E. pratorum*. It was found at all investigated localities in a larger number of specimens in different habitat types and at different altitudes. It usually occurs together with *E. pertinax* with which it is similar. Nielsen (1995) reintroduces the name *E. similis*, which is an older synonym for *E. pratorum*. *E. pertinax* has all front and middle legs tarsomers yellow to orange in both sexes, and *E. similis* has at least two hind, front and middle leg tarsomers, black to very dark brown. The genital apparatus of males in both species have completely different form of sclerotized extension at the distal end of the sheath (Speight, 2001). By revising the material related to the species *E. rupium* (Glumac, 1968: 847), we determined that it is a species of *E. similis*, which excludes the findings of the species *E. rupium* for the territory of Macedonia.

63. *Eristalis tenax* (Linnaeus, 1758)

Eristalomyia tenax Linnaeus, 1758 in Glumac, 1968

Habitat type: Ubiquist; lives in urban areas as well.

Adult: Adults fly up to 5m above the ground; they rest on the flowers and leaves of bushes and shrubs.

Host plant: A wide range of white, yellow, pink, and blue flowers (de Buck, 1990).

Flight period: February / November, they appear individually even in extremely cold winter conditions.

Larva: Described by Hartley (1961), as an aquatic and subaquatic species. It develops in waters rich in organic matter and cow manure.

Distribution: Highly migratory species; cosmopolitan; the most widespread; known in all regions except Antarctica; throughout Europe except in the far north; it occasionally arrives in the most remote islands of northern Europe, such as the Faroe Islands (Jensen, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a very common species in Macedonia, found in all investigated localities.

Published findings: as *Eristalomyia tenax* in Glumac (1968: 847); (Krpač et al, 2001: 183).

Material: 55 specimens (39♂, 25♀) SKO.

Verified literature data: as *E. tenax* (Glumac, 1968): widespread species in numerous localities in Macedonia: Tetovo, Staro Selo, 1♂, June 07, 1959, (leg. Glumac); Tetovo, Vata Bogunović, 1♂, 1♀, June 07, 1959, (leg. Glumac); r. Radika, Azajnica, 1♂, June 10, 1959, (leg. Glumac); Gostivar, 1♀, August 29, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, August 30, 1959, (leg. Glumac); r. Radika, 1♂, August 30, 1959, (leg. Glumac); Tetovo, village of Žerovjane, 1♀, May 28, 1960, (leg. Glumac); Sharr Mountains, 1♀, May 28, 1960, (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, May 30, 1960, (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, August 03, 1961, (leg. Glumac); Sharr Mountains, 2♂, August 28, 1961, (leg. Glumac); r. Radika, 2♂, August 29, 1961., (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, August 27, 1966, (leg. Glumac); r. Radika, 1♂, August 28, 1966, (leg. Glumac); (Krpač et al, 2001), at all sites on the Sharr Mountains.

New findings: Sharr Mountains, 1♂, 1♀, July 23, 1939, (leg. A. Fadeev); Ljuboten, 2♀, June 25, 1955, (leg. Čingovski); Sharr Mountains, Ljuboten, 1♀, June 28, 1956, (leg. Čingovski); Sharr Mountains, 1♀, July 15-26, 1958, (leg. Joksimović); Sharr Mountains, Popova Šapka, 1♀, July 20, 1958, (leg. Joksimović); Sharr Mountains, Titov Vrv, 1♂, 1♀, July 20, 1958, (leg. Čingovski); Tetovo, s. Tearce, 1♂, July 22, 1958, (leg. Joksimović); Mavrovi Anovi, 1♀, July 03, 1971, (leg. Čingovski); Tetovo, village of Vratnica, 1♂, 1♀, July 21, 1971, (leg. Čingovski); Mavrovi Anovi, 1♂, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, July 05, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, July 6, 1988, (leg. Krpač); Mavrovi Anovi, 1♂, July 18, 1988, (leg. Topukova); Mavrovi Anovi, 1♂, August 12, 1990, (leg. Krpač); Sharr Mountains, Tri Vodi, 1♀, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♂, July 09, 1991, (leg. Ivanovski); Mavrovi Anovi,

1♀, July 26, 1994, (leg. Krpač); r. Radika, Pilana, 1♂, September 16, 1994. (leg. Krpač); Mavrovi Anovi, 1♂, May 23, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, June 06, 1996, (leg. Krpač); Mavrovo, Trnica, 1♂, June 06, 1996, (leg. Krpač); Mavrovo, Lukovo Pole, 1♂, 1♀, October 08, 1997, (leg. Krpač); Mavrovo, village of Nichpur, 1♂, October 08, 1997, (leg. Krpač); Mavrovi Anovi, 1♀, October 10, 1997, (leg. Krpač); Mavrovi Anovi, 1♂, 1♀, July 10, 1998, (leg. Krpač); Mavrovi Anovi, meadow, on the flower of Taraxacum officinale, 2♀, May 16, 2003, (leg. Krpač).

Comment: This species has been recorded throughout the Balkan Peninsula. *E. tenax* is the most common species of the genus, with the most numerous populations, found in all examined localities in Macedonia, regardless of altitude, climate, or habitat type.

Genus *Eumerus* Meigen, 1822

This is the Genus with the largest number of species in the Palearctic region. 140 species are known (Peck, 1988). The taxonomic status of a significant number of species is unprecise and the nomenclature of some species is confusing. More than 50 species are listed for Europe, and most are from the southern parts of the continent. For now, there is no reliable key that covers all species. 12 species are known for Macedonia, 3 of which are registered for Sharr Mountains. The larvae of the genus *Eumerus* are characterized by the fact that they develop in some bulbs of the plants they feed on, sometimes causing great damage to bulbous crops.

64. *Eumerus amoenus* Loew, 1848

Habitat type: Thermophilic forests of *Quercus*; pastures with high-growing vegetation, such as *Pteridium*; hedges, fields, and gardens in southern Europe.

Adult: Adults fly between the stems of low-growing plants, up to 1m above the ground; they rest in the sun on the leaves of vegetation along the path or on the ground.

Host plant: *Heracleum sphondylium*.

Flying period: June and mid-July, and the most massive in August.

Larva: According to Efflatoun (1922), it develops in *Alium*, in potato tubers, in watermelon, grapes and in damaged rhizomes of *Iris germanica* (Speight, 2001).

Distribution: From central France, in the south to Portugal and Spain; around the Mediterranean (including Cyprus, Rhodes and Crete) to Greece and Morocco; Canary Islands, Azures; southern Germany, Switzerland and Central Europe; Caucasus, Kazakhstan, Turkestan, Tajikistan, and Mongolia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: It is a rare species in Macedonia, collected in two localities.

Published findings: (Glumac, 1968: 858); (Krpač et al, 2001: 183).

Material: 1 specimen (1♂).

Verified literature data: (Glumac, 1968): r. Radika, on the flower of *Heracleum sphondylium*, 1♂, 31.05.1960, (leg. Glumac). SKO.

Comment: This is a typical Mediterranean species. In Macedonia, it is rare, collected only in two localities: the canyon of the river Radika and Osoj mountain, above the village of Matka. Males of the species can be easily separated from males of other related species, which is not the case with females.

65. *Eumerus olivaceus* Loew, 1848

Habitat type: Mountain pastures and sparse forests of *Fagus* and *Quercus* to sea level.
Adults: Adults fly fast and low, on grassy terrains, among sparse stems of low vegetation; resting on rocks or on bare ground in the sun.

Host plant: White Umbelliferae, Ranunculus, *Daucus carota*, *Anthriscus sylvestris*, *Verbascum* sp. and *Dianthus* sp.

Flight period: June and end of July to August.

Larva: No data.

Distribution: A widespread Mediterranean species that is numerous in the Pyrenees in Spain up to 1000 m above sea level, across southern France from the Dordogne and the Atlantic coast to Italy (including Sicily), the former Yugoslavia, Bulgaria, and Romania (Speight, 2001).

Balkan Peninsula: Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: The species is collected at several sites.

Published findings: (Glumac, 1968: 858); (Vujić and Šimić, 1998: 180); (Krpač et al., 2001: 183).

Material: 5 specimens (4♂, 1♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, shrubs, on a flower *Daucus carota*, 2♂, 01.03.1961, (leg. Glumac), SKO. (Vujić and Šimić, 1998): Mavrovi Anovi, 1♂, 27.08.1966, (leg. Glumac) IBNS. (Krpač et al., 2001): Mavrovi Anovi, 1♂, 24.05.1995, (leg. Krpač) SKO.

New findings: Sharr Mountain, below Titov Vrv, 1♀, 20.07.1958, (leg. Čingovski), SKO.

Comment: *E. olivaceus* is registered in southern European countries at altitudes up to 1000m, and in Macedonia it is collected at several sites and at higher altitudes up to 1800m.

66. *Eumerus tuberculatus* Rondani, 1857

Habitat type: Deciduous forests, thermophilic *Quercus* forests.

Adult: Adults live on the edges of forest clearings and paths in the oak forest.

Host plant: No data.

Flight period: May / October.

Larva: Not described.

Distribution: France, from the Rhône Valley in the south to the Mediterranean; Germany, northern and central Italy, and Romania (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, and Macedonia.
Macedonia: A rare species.

Published findings: (Vujić and Šimić, 1998: 185-186).

Material: 1 specimen (1♂).

Verified literature data: (Vujić and Šimić, 1998): Mavrovo, 1♂, August 27, 1966, (leg. Glumac) IBNS.
Comment: The species is widespread in the Balkan Peninsula, especially in the Mediterranean area, lowland, and mountainous areas. It is a rare species in Macedonia, collected in only two localities.

Genus *Eupeodes* Osten - Sacken, 1877

European species of the genus *Eupeodes* until recently were referred to as *Metasyrphus*. Vockeroth (1986) proved that there is no basis for the division of *Eupeodes* and *Metasyrphus* into separate genera, and that the name of the genus *Eupeodes* has advantages over the name *Metasyrphus*. European genus species were revised by Dusek and Laska (1976) as *Metasyrphus*. Marcos-Garcia and Laska (1983) and Mazánek et al, (1999) described three European species: *E. duseki*, *E. lucasi* and *E. goeldlini*. Vockeroth (1992) also added the species *E. curtus* (Hine), while Olafsson (1991) also confirmed the presence of *E. nigroventris* (Fluke) species in Europe. 17 species of the genus *Eupeodes* have been registered in Europe (Speight, 2001). 5 species are known in Macedonia: *E. corollae* (Fabricius, 1794); *E. lapponicus* (Zetterstedt, 1838); *E. latifasciatus* (Macquart, 1829); *E. lucasi* (Marcos-Garcia et Laska, 1983) and *E. luniger* (Meigen, 1822). 4 species of this genus have been registered on Sharr Mountains. Larvae of this genus are aphidophagous.

67. *Eupeodes corollae* (Fabricius, 1794)
syn. *Syrphus corollae* (Fabricius, 1794) in Glumac, 1968
sub. *Syrphus luniger* Meigen, 1822 in Glumac, 1968 (in part)
syn. *Metasyrphus corollae* (Fabricius, 1794) in Krpač et al, 2001

Habitat type: Open spaces, pastures, dry riverbeds, in urban areas, on farms, suburban gardens, orchards and parks.

Adult: Adults reside on fences, grasslands in forests, fields, gardens, forest paths and paths; fly around low vegetation; they visit the banks of streams, lakes (garden ponds) and watering places.

Host plant: Umbelliferae; *Achillea millefolium*, *Campanula rapunculoides*, *Chrysanthemum*, *Cirsium*, *Eschscholzia californica*, *Galeopsis*, *Hypericum*, *Leontodon*, *Origanum vulgare*, *Potentilla erecta*, *Ranunculus*, *Rubus fruticosus*, *Salix*, *Senecio*, *Tripleurospermum inodoratum*, *Tussilago*, *Orlaya grandiflora*, *Heracleum sphondylium*, *Euphorbia* sp., *Tanacetum* sp., *Pastinaca sativa*, *Mentha* sp., *Eryngium* sp., *Daucus carota* and *Convolvulus arvensis*. De Buck (1990) gives an extended list of plants that this species visits.

Flight period: May / September and can survive in November (in southern Europe and throughout the year).

Larva: Described by Dusek and Laska (1961). Detailed larval biology is described by Marcos-Garcia (1981); larvae are aphidophagous on low-growing plants, especially Leguminosae, and on various cultures (*Avena*, *Beta*, *Cucurbita*, *Lactuca*, *Triticum*, *Zea*). According to Dusek and Laska (1961), this species overwinters in the pupal phase, which is not common for aphidophagous surfides.

Distribution: From Iceland, Finland, Scandinavia, and the Faroe Islands (Jensen, 2001), in the south to the Iberian Peninsula, the Mediterranean, Madeira, the Canary Islands and North Africa; coastal states in Africa, including South Africa; Mauritius; from Ireland, in the east through most of Europe to the European part of Russia; across Siberia, from the Urals to the Pacific coast; Japan, China and Formosa. This species is highly migratory; it has been observed to use the coastal belt as its migration route (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Very common species.

Published findings: as *S. corollae* in Glumac (1968: 870); as *M. corollae* in Krpač et al (2001: 181-182).

Misidentification: as *S. luniger* in Glumac (1968: 871) (in part): Mavrovi Anovi, forest, on *Tanacetum* sp., 1♀, August 01, 1961, (leg. Glumac) SKO (= *E. corollae*).

Material: 26 specimens (8♂, 18♀).

Verified literature data: as *S. corollae* in Glumac (1968): Tetovo, Vata Bogunović, 1 07, June 07, 1959, (leg. Glumac); Tetovo, wet meadow, 3♂, 1♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, 3♂, 3♀, June 09, 1959, (leg. Glumac); valley of the river Radika, on the leaves of *Pastinci sativa*, 1♂, May 31, 1960, (leg. Glumac); valley of the river Radika, on the leaves of *Pastinci sativa*, 1♀, August 29, 1961, (leg. Glumac), SKO. as *M. corollae* in Krpač et al (2001): Mavrovi Anovi; Mavrovi Anovi; Mavrovo, Lukovo Pole, SKO.

New findings: Sharr Mountains, Tri Vodi, 2♀, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♀, July 09, 1991, (leg. T. Ivanovski); Mavrovi Anovi, 1♀, May 23, 1995, (leg. Krpač); Mavrovi Anovi, 2♀, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 4♀, May 25, 1995, (leg. Krpač); r. Radika, upper stream, 1♀, July 04, 1995, (leg. Krpač); Mavrovo, s. Nichpur, 1♀, May 10, 1996., (leg. Krpač), SKO.

Comment: It is one of the most numerous and widespread species of this genus on the Balkan Peninsula. It is registered at different habitat types and different altitudes. It is a very common and numerous species in Macedonia, found in many localities.

68. *Eupeodes lapponicus* (Zetterstedt, 1838)

Habitat type: Coniferous forests of *Picea* and *Abies* and deciduous mesophilic and moist forests of *Betula* and *Fagus*; coniferous plantations of *Picea* and *Abies*.

Adult: Adults reside on forest clearings and trails; males hover at a height of 2-5m above the trail, but also in the shade next to large trees near at least one female; they rest on shrub leaves or trees. Goeldlin (1974) observed that *E. lapponicus* can overwinter as an adult; many females were observed in mid-November exploring cracks in the rocks, next to forest trails from *Quercus* and *Picea*. Wolff (1990) found females of *E. lapponicus* overwintering in the brick cavities of a bridge at a forest site. Kula (1982) indicates that the species overwinters in the form of larvae or pupae. It can be said that this species manages to survive the winter equally well in all stages of development.

Host plant: *Caltha*, *Chaerophyllum*, *Chelidonium*, *Crataegus*, *Euphorbia*, *Knautia*, *Ligustrum*, *Prunus spinosa*, *Ranunculus*, *Rubus*, *Salix*, *Sorbus*, *Tussilago*, *Trolius* sp., *Crepis* sp., *Sambucus* sp. *Taraxacum officinale* and *Verbascum longifolium*.

Flight period: March / November, but most often in June / August. This is a highly migratory species (Aubert et al, 1976).

Larva: Described by Goeldlin (1974). The larvae overwinter in the fallen leaves of *Picea*.
Distribution: from Finland and Scandinavia, in the south to Spain and the Mediterranean (including Crete); and from Britain, in the east across much of Eurasia (including Turkey), to the Pacific coast; Iceland, Greenland, North America from Alaska to California (Speight, 2001).

Balkan Peninsula: Slovenia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It has been registered in Macedonia.

Published data: (Krpač, 2006).

Material: 44 specimens (42♂, 2♀).

New findings: Mavrovi Anovi, spruce forest, on *Crepis* sp., 3♂, August 30,1959, (leg. Glumac); Mavrovi Anovi, 1♂, August 03, 1961, (leg. Glumac); Mavrovi Anovi, 2♀, July 09, 1991, (leg. Krpač); r. Radika, 1♂, July 04, 1995. (leg. Krpač); Mavrovi Anovi, 3♂, June 05, 1996, (leg. Krpač); Mavrovi Anovi, 13♂, June 05, 1996, (leg. Krpač); Mavrovi Anovi, 17♂, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 2♂, June 06, 1996, (leg. Krpač); Mavrovo, Trnica, 2♂, June 06, 1996, (leg. Krpač), SKO.

Comment: In Macedonia, this species is registered on the mountains in a larger number of specimens and at higher altitudes, but also in areas influenced by the Mediterranean climate.

69. *Eupeodes latifasciatus* (Macquart, 1829)

Habitat type: Wetlands and open terrains; wet seasonal flooded pastures, oligotrophic pastures *Molinia*; along streams and uncultivated land.

Adult: Adults fly at altitudes above 2m; usually between stems of low vegetation near water.
Host plant: white Umbelliferae; *Caltha*, *Convolvulus*, *Euphorbia*, *Prunus padus*, *Ranunculus*, *Salix repens*, *Taraxacum*, *Tussilago*, *Ilex*.

Flight period: May / September, most massive in June and August (both April and October in southern Europe).

Larva: Described by Dusek and Laska (1960a); the larvae are aphidophagous, at the root.

Distribution: from Iceland, Finland, and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean (including Cyprus), North Africa and Turkey; from Ireland, in the east through most of Europe, to the European part of Russia; across Siberia from the Urals to the Pacific coast (Sakhalin Peninsula, Kuril Islands); India; in North America, from Alaska, in the south to California and Texas (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: This species is registered in Macedonia at three localities.

Published findings: (Krpač. 2006).

Material: 3 specimens (3♀).

New findings: Karadžica, 1♀, July 8, 1989, (leg. Krpač); Mavrovo, 1♀, July 26, 1994, (leg. Krpač); s. Lazaropole, 1♀, October 07, 1994., (leg. Krpač), SKO.

Comment: *E. latifasciatus* belongs to the group of widespread species, but it is rare in Macedonia, registered in only three localities.

70. ***Eupeodes luniger*** **(Meigen, 1822)**
syn. *Syrphus luniger* Meigen, 1822 in Glumac, 1968 (in part)

sub. *Syrphus braueri* (Egger, 1858) in Glumac 1968

Habitat type: Open spaces, forests, and pastures; on forest clearings and paths, in the urban environment, on various farms, orchards, suburban gardens and parks, along the edge of coniferous plantations.

Adult: Adults live on hedges, next to forest paths and clearings, in gardens; they fly fast, above the ground vegetation and around the bushes and shrubs; males hover next to hedges, on sunny paths in the treetops, at a height of up to 4m. It has long been known that the species overwinters as an adult in Central Europe.

Host plant: White Umbelliferae; *Calluna*, *Leontodon*, *Malus sylvestris*, *Polygonum cuspidatum*, *Prunus spinosa*, *Ranunculus*, *Rosa rugosa*, *Senecio*, *Taraxacum*, *Orlaya grandiflora*, *Lepidium draba*, *Daucus carota*, *Euphorbia* sp., *Spiraea* sp., *Crataegus monogyna*, *Anthriscus sylvestris*, *Alyssum* sp. and *Pastinaca sativa*.

Flying period: April / November, and March in southern Europe, the most massive in May, June, and August.

Larva: Described by Bhatia (1939) and Rotheray (1994). The biology of larvae was published by Dusek and Laska (1974) and Marcos-Garcia (1981); larvae are aphidophagous on low plants and crops (*Cynara*, *Lavatera*, *Vicia*, *Zea*). The species also overwinters in the pupal phase (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean, Madeira and North Africa; from Ireland, in the east through most of Europe, to the European part of Russia and Asia Minor (including Turkey); in Siberia from the Urals to the Pacific coast (Kuril Islands);

Japan and northern India. This species is highly migratory and numerous in Europe; migrates from the south during the summer (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common and numerous species.

Published findings: as *S. luniger* in Glumac (1968: 871) (in part).

Misidentification: sub. *S. braueri* in Glumac (1968: 870) (in part): Mavrovi Anovi, valley of the stream, on the flower of *Pastinaca sativa*, 1♀, 01-03.08.1961. (leg. Glumac) SKO (= *E. luniger*).

Material: 11 specimens (3♂, 8♀).
Verified literature data: as *S. luniger* in Glumac (1968) (in part): Tetovo, wet meadow, on a flower Ranunculus sp., 1♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, June 9, 1959, (leg. Glumac); Mavrovi Anovi, mixed forest, 1♀, May 30, 1960, (leg. Glumac), SKO.

New findings: Mavrovi Anovi, 1♂, June 3, 1959, (leg. Glumac); Mavrovi Anovi, next to the lake, on *Lepidium draba*, 1♀, June 9, 1959, (leg. Glumac); Valley of the river Radika, on leaves, 2♀, May 31, 1960, (leg. Glumac); Sharr Mountains, 1♂, May 26, 1990, (leg. Krpač); Sharr Mountains, Tri Vodi, 1♀, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♀, June 05, 1996., (leg. Krpač), SKO.

Comment: This is one of the most common species of the genus *Eupeodes* in Europe. In Macedonia, it is very common and numerous, found in various habitats of deciduous and dark coniferous forests, in the lowlands, all the way to the mountain area. *E. luniger* is close to *E. flaviceps*. It is very difficult to accurately distinguish females of these two species (Speight, 2001)

Genus *Fagisyrphus* Dusek et Laska, 1967

Revised by Dusek and Laska (1967), the genus *Fagisyrphus* was singled out as a separate genus that includes species from the subgenus *Meligramma*. *Fagisyrphus* is a younger synonym of the genus *Melangyna*. There are also the following data in the literature: according to Peck (1988) the genus *Melangyna* contains two subgenera, *Melangyna* Verrall, 1901 and *Meligramma* Frey, 1946. The species *F. cinctus* (Fallen, 1817) in Peck (1988) and other authors is in subgenus *Meligramma*. Frey (1946) classifies the subgenus *Meligramma* as a subgenus of the genus *Epistrophe* Walker, 1852. In Macedonia and Sharr Mountains, this genus is represented by only one species of *F. cinctus* (Fallen, 1817). The larvae are aphidophagous.

71. *Fagisyrphus cinctus* (Fallen, 1817)
Epistrophe cincta (Fallen, 1817) in Glumac, 1968

Habitat type: Deciduous forests (*Fagus* / *Quercus*), along the edges of clearings and roads.

Adult: Males hover above roads or on forest clearings at a height of 3 and more meters. Adults live in the canopy of trees, but they also land on flowers.

Host plant: White Umbelliferae; *Acer pseudoplatanus, Crataegus, Ligustrum, Malus sylvestris, Prunus spinosa, Rubus idaeus, Salix, Sambucus nigra, Sorbus aucupariae, Urtica dioica, Viburnus opulus*.

Flight period: April / June and July / early September.

Larva: Described by Dusek and Laska (1962) as an aphidophagous. (Speight, 2001).

Distribution: Finland and Scandinavia, south to Iberia and the Mediterranean; from Ireland east through most of Europe and Russia, in the Crimea and Turkey. According to Vockeroth (1980), the specimens cited for North America were misdiagnosed (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: This species was found in only two localities.

Published findings: (Glumac, 1968).

Material: 2 specimens (1♂, 1♀).

Verified literature data: as *Epistrophe cincta* in Glumac (1968): Mavrovo, 1♂, 1♀, August 13, 1961, (leg. Glumac) SKO.

Comment: In Macedonia, this species is poorly researched, found in two localities on altitude of about 1000m.

Genus *Helophilus* Meigen, 1822

The genus *Helophilus*, according to Peck (1988), belongs to 9 European species, but Nielsen (1997) noticed that two of them (*H. arcticus* Zetterstedt and *H. borealis* Staeger) are synonymous with other European species. Some authors (e.g., Peck, 1988) include *Anasimyia* and *Lejops* as subgenera in the genus *Helophilus*. According to Speight (2001), the genus *Helophilus* belongs to 6 species. The species *H. continuus* from Romania was later added to this list (Bradescu, 1989). To determine the European species of *Helophilus*, a key is used today that combines the characteristics from the keys: Speight (1988b), Bradescu (1991) and Nielsen (1997). Only two species have been found in Macedonia and Sharr Mountains: *H. pendulus* (Linnaeus, 1758) and *H. trivittatus* (Fabricius, 1805). The larvae belong to aquatic saprophages. They develop in an aquatic environment rich in decaying substances.

72. *Helophilus pendulus* (Linnaeus, 1758)

Habitat type: Freshwater / wetlands; this is an anthropophilous species, which has become ubiquitous in some regions of Europe, due to the ability of larvae to develop in stagnant waters.

Adult: Adults fly low above and between coastal vegetation; they are also found far from the water along forest paths, in suburban gardens, along field borders and pastures.

Host plant: Compositae, Rosaceae, including low flowering trees; Umbelliferae, and a wide range of other yellow and white flowers (extended list by de Buck, 1990), *Berberis*, *Menianthes*, *Polygonum*, and *Salix*; and pink flowers of colors like *Cirsium* and *Succisa*.

Flight period: April / October (March in southern Europe and stray specimens in November).

Larva: Described by Hartley (1961); larvae develop in stagnant water, in ponds (including garden ponds), channels, water tributaries, in tree cavities, in garden trenches, in decaying fruits, in cow dung, wet manure, and in pits. (Speight, 2001).

Distribution: From Iceland, Finland, Scandinavia, and the Faroe Islands (Jensen, 2001) in the south to the Iberian Peninsula; from Ireland in the east through central and southern Eurasia to the Pacific coast; in southern Europe it is more localized.

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: The species was findings in only one locality.

Material: 1 specimen (1♀)

New findings: Mavrovi Anovi, 1♀, 19.05.1977, (leg. Čingovski), SKO.

Comment: The Mavrovi Anovi locality is the only one finding of this species in our country.

73. *Helophilus trivittatus* (Fabricius, 1805)
Tubifera trivittata (Fabricius, 1805) in Glumac, 1968

Habitat type: Wetlands and open spaces; along river banks, in moist seasonally flooded pastures and salt marshes; in southern Europe and in urban areas, near irrigation channels on farms.

Adult: Adults fly fast and low above ground vegetation, near weakly flowing waters; they often rest on bare ground; the species is migratory to some extent; adults are often found at greater distances from larval development sites.

Host plant: Umbelliferae; yellow Compositae; *Armeria*, *Aster*, *Cakile*, *Centaurea*, *Chysanthemum*, *Cirsium*, *Crataegus*, *Epilobium angustifolium*, *Eryngium*, *Eupatorium*, *Euphorbia*, *Ligustrum*, *Lychnis*, *Lythrum*, *Mentha*, *Menyanthes*, *Origanum*, *Plumbago*, *Polygonum persicaria*, *Potentilla*, *Ranunculus*, *Rubus fruticosus*, *Salix*, *Sorbus*, *Sambucus* sp., *Malva sylvestris*, *Sinapis arvensis*, *Orlaya grandiflora* and *Pastinaca sativa*.

Flight period: May / October, and the most massive in August.

Larva: Not described but known to be grown in moist hay (Dolezil, 1972), and found in liquid mud rich in organic fertilizer and rotten vegetation (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to the Mediterranean, and from Ireland in the east through Eurasia to the Pacific, including Iran and Afghanistan (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: In any year, this is a common species in Macedonia.

Published findings: as *T. trivittata* in Glumac (1968: 849); (Krpač et al, 2001: 183).

Material: 5 specimens (2♂, 3♀).

Verified literature data: (Krpač et al, 2001).

New findings: Mavrovi Anovi, 1♀, 19.05.1977, (leg. Čingovski); Mavrovi Anovi, 2♂, 1♀, 24.05.1995, (leg. Krpač); Mavrovi Anovi, 1♀, July 26, 2004, (leg. Krpač), SKO.

Comment: This is a widespread species on the Balkan Peninsula. It has been observed in various habitats, from lowlands to high mountains, and in some years, it is a common species in Macedonia. In recent literature data, this species is referred to as *H. parallelus* (Harris, 1776), which is synonymous with *H. trivittatus* (Fabricius, 1805). The use of the name *H. parallelus* for this species is not unjustified (Speight, 1988b), because females of *H. parallelus* (Harris) are very similar to females of *H. affinis* and *H. hybridus* and can be found in nature in the same places (Speight, 2001).

Genus *Heringia* Rondani, 1856

Herringia is a genus that has been revised very often and has undergone many changes. Within this genus, it is very difficult to distinguish females of related subgenera *Heringia* and *Neocnemodon*. Vockeroth and Thomson (1987) logically did this by combining the characteristics of these two close genera and merging them into one genus under the older name *Heringia*. Recent data (Vujic, 1999a) and corrections (Speight, 2004) show that the genus *Heringia* is represented by 11 species in Europe. 3 species have been registered in Macedonia: *H. herringi* (Zetterstedt, 1843); *H. latitarsis* (Egger, 1865) and *H. senilis* Sack, 1938. On Sharr Mountains is registrated only 1 species. The larvae of *Heringia* species feed on aphids.

74. *Heringia latitarsis* (Egger, 1865)
Neocnemodon latitarsis (Egger, 1865) in Vujić, 1995; Vujić, 1999b

Habitat type: Forests; old mixed coniferous forests of *Abies*, deciduous acidophilic and thermophilic forests of *Quercus* and evergreen forests of *Quercus ilex*.

Adult: Adults fly in the treetops, descend to visit the flowers; they sunbathe on the leaves of low-growing shrubbery, on the edge of the forest; resting on the leaves of plants; they visit wet sandy places along the stream in times of heat.

Host plant: White Umbelliferae; *Oregano*, *Prunus serotina*, *Rosa rugosa*, *Rubus*, *Vaccinium uliginosum*.

Flight period: End of May / June and August / September (July / September at higher altitudes).

Larva: The larva was found by Laska and Stary (1980), described by Dusek and Laska (1960), they feed on aphids from the leaves of plants: *Abies*, *Malus*, *Populus* and *Ulmus* (Speight, 2001).

Distribution: From Denmark, in the south to the Pyrenees; from Britain in the east through Central and Southern Europe (former Yugoslavia) to the European part of of Russia, and the Caucasus; introduced in North America (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Found only in three locations in Macedonia.

Published findings: as *N. latitarsis* in Vujić (1995); (Vujić, 1999b).

Material: 4 specimens (3♂, 1♀).

Verified literature data: as *N. latitarsis* (Vujić, 1995): Mavrovi Anovi, 1♂, August 13, 1968; (Vujić, 1999b), IBSN.

Comment: This species is registered in a small number of localities in Macedonia. Our research failed to catch specimens of this species. It is probably rare species.

Genus *Melangyna* Verrall, 1901

Some European species of the genus *Melangyna* have never been included in any key to this genus. Some authors have considered that the genus *Melangyna* belongs to species from two subgenera: *Melangyna* and *Meligramma*. The most understandable keys to the determination of European *Melangyna* species were given by van der Goot (1981), Speight (1988b) and Torp (1994). Three species have been identified in Europe, of which only *M. labiatarum* (Verrall, 1901) has been registered in Macedonia and Sharr Mountains. The larvae feed on aphids.

75. *Melangyna labiatarum* (Verrall, 1901)
Habitat type: On the edge of the forest mixed coniferous forests with *Pinus*.

Adult: Adults fly in the treetops, descend to visit the flowers.

Host plant: *Pastinaca sativa, Daucus carota, Tanacetum, Malva,* and *Mentha* sp.,

Flight period: End of May.

Larva: The larvae of this genus are aphidophagous (Šimić, 1987).

Distribution: From Great Britain through Denmark, the Netherlands, Belgium, Germany, Poland, the Czech Republic to Romania (Peck, 1988).

Balkan Peninsula: Montenegro and Macedonia.

Macedonia: This species was registered in Macedonia of two localities.

Material: 1 specimen (1♂).

Mavrovi Anovi, 1♂, August 03, 1961, (leg. Glumac), SKO.

Comment: This is a Central European species and is rare in the Balkans. So far, it has been registered only in Montenegro. Speight (2001) does not list this species in a review of European species of surfside. Two localities of the species with individual specimens (only two) were recorded in Macedonia.

Genus *Melanogaster* Rondani, 1857

This genus has recently been revised (Maibach et al, 1994a). Earlier, species of this genus were housed in the genus *Chrysogaster*. The European genus list also includes the species *Melanogaster curvistylus* Vujic et Stucke, 1998. The number of European species is 5, of which in Macedonia and Sharr Mountains is registered only the species *M. nuda* (Macquart, 1829). Larvae feed on the tissues of aquatic plants.

76. *Melanogaster nuda* (Macquart, 1829)
syn. *Chrysogaster viduata* (Linnaeus, 1758) in Glumac, 1968

Habitat type: Calcium-rich wetlands, lakes, coastal vegetation of limestone regions.

Adult: Adults fly up to 1m above the ground, above wet meadows, and pastures near stagnant waters.

Host plant: *Caltha*, *Carex*, *Chaerophyllum*, *Crataegus*, *Ranunculus*, *Euphorbia polychroma*, *Lepidium draba*, *Euphorbia* sp., *Orlaya* sp., *Heracleum sphondylum, Chrysanthemum* sp. and *Pastinaca*.

Flight period: May / June and July / August at higher altitudes.

Larva: Described by Hennig (1952); Maibach and Goeldlin (1994); larvae are found in plant roots next to running water (Speight. 2001).

Distribution: From Sweden and Finland, in the south to central Spain; from northern France and Belgium, in the east through Central Europe, to the European part of Russia; southeast in southern Turkey and Syria (Speight. 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species.

Published findings: (Glumac, 1968: 863); (Vijić, 1995: 47); (Vujić, 1999b: 410).

Material: 22 specimens (2♂, 20♀).

Verified literature data: as *Chrysogaster videata* in Gluma (1968): Tetovo, Staro Selo, vlažna livada, 1♀, 07.06.1959, (leg. Glumac); Tetovo, Vata Bogunović, meadow, 1♀, June 07,1959, (leg. Glumac); Tetovo, wet meadow, 3♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, next to the lake, on *Lepidium draba* and *Euphorbia* sp., 2♂, 4♀, June 09, 1959, (leg. Glumac); Mavrovi Anovi, wet meadow, on *Ranunculus* sp. and *Chrysanthemum* sp., 1♀, June 10, 1959, (leg. Glumac); Tetovo, Staro Selo, stream valley, on *Euphorbia* sp., 4♀, May 28, 1960, (leg. Glumac); Mavrovi Anovi, the valley of a mountain stream, on flowers, 4♀, May 30, 1960, (leg. Glumac); the valley of the river Radika, on leaves, 1♀, May 31, 1960, (leg. Glumac); (Vujić, 1995): all data in Glumac, 1968: 863 as *C. vidiata* refer to *M. nuda* (Vujić, 1999b): Mavrovo, DM-71.

New findings: Mavrovi Anovi, 1♀, June 05,1996, (leg. Krpač), SKO.

Comment: *M. nuda* is widespread species in the western Palearctic but going south is much rarer. It is located on the entire Balkan Peninsula and is most common in the northern and central parts. In

Macedonia, it is a numerous and common species, registered in numerous localities, in different habitats with different altitudes. The name *M. nuda* was established as an older synonym of the species *C. vidiata* L. (Maibach et al, 1994a), and this is also referred to in the recent literature as *C. lucida* (Scopoli), and they found that such application is wrong. In some collections, the species *M. nuda* and *M. hirtella* are often mixed. Determination keys usually describe that *M. nuda* has a brown spot in the middle of the wing and *M. hirtella* does not. But this character is not entirely reliable because *M. nuda* may not have such spots on the wings, and *M. hirtella* may have wings quite dark on the anterior half (Speight, 2001).

Genus *Melanostoma* Schiner, 1860

Melanostoma is one of the genera that needs detailed revision to clarify many ambiguities in the taxonomy of the genus. There are data on some species that are listed only for typical localities. Then, the species *M. mellinum* (Linnaeus, 1758) is assumed to be a complex of several related taxa (Speight and Lukas, 1992). According to Peck (1988), 18 synonyms related to this species have been identified. This opinion of extremely large variability, i.e., it is a complex of several taxa whose status has yet to be clarified. Two species of this genus are known for Macedonia and the Sharr Mountains: *M. mellinum* (Linnaeus, 1758) and *M. scalare* (Fabricius, 1794). The name of the third species *M. transfugum* also appears in the literature (Zetterstedt, 1838). The larvae of species of *Melanostoma* are aphidophagous.

77. *Melanostoma mellinum* (Linnaeus, 1758)

Habitat type: Open spaces, pastures, grasslands, forest paths; dominate in urban areas, on farms, fields, in suburban gardens, in parks, along the paths of coniferous forests.

Adult: Adults reside on pastures; fly low between vegetation; often active in cloudy conditions.

Host plant: Gramineae; Cyperaceae; bele Umbelliferae, *Allium ursinum*, *Bellis perennis*, *Caltha*, *Echlosia californica*, *Euphorbia* (*E. polychroma*), *Leontodon*, *Luzula*, *Plantago* (*P. lanceolata*), *Ranunculus* (*R. repens*), *Salix repens*, *Stellaria holostea*, *Succisa*, *Taraxacum*, *Chrysanthemum* sp., *Pastinaca sativa*, *Daucus carota*, *Verbascum* sp., *Alyssum* sp., *Sinapis* sp., *Angelica* sp., *Sambucus* sp., *Rubus* sp., *Mentha* sp., *Anthriscus* sp., *Heracleum* sp., *Eryngium campestre*, *Crataegus monogyna*, *Orlaya* (*Orlaya grandiflora*), *Lapsona* sp. and *Petasites hibridus*.

Flight period: April / October.

Larva: The larva was described by Dusek and Laska (1960a); it feeds on aphids on numerous low-growing plants.

Distribution: From Iceland, Finland, and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean and North Africa; from Ireland in the east through most of Europe to the European part of Russia, in Siberia from the Urals to the Pacific coast; in North America from Alaska to Quebec, and in the south to Washington (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: This is one of the most widespread species in Macedonia.

Published findings: (Glumac, 1968: 868); (Krpač et al, 2001: 183).

Material: 42 specimens (13♂, 29♀).

Verified literature data: (Glumac, 1968): Tetovo, Vata Bogunović, meadow, 1♂, 1♀, June 07, 1959, (leg. Glumac); Tetovo, wet meadow, 1♂, 1♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, spruce forest, on flowers, 1♂, 3♀, June 09, 1959, (leg. Glumac); Tetovo, by the river, on flowers and leaves, 2♂, August 29, 1959, (leg. Glumac); Gostivar, s. Vrutok, shrubs, on *Verbascum* sp., In leaves, 1♀, August 29, 1959, (leg. Glumac); Mavrovi Anovi, next to the lake, on *Mentha* sp. and *Heracleum* sp., 1♂, 3♀, August 30, 1959, (leg. Glumac); Radika valley, on the leaves of *Mentha* sp., 1♀, August 30, 1959, (leg. Glumac); Sharr Mountains, shrubs, stream valley, 1♀, May 28, 1960, (leg. Glumac); Tetovo,

Staro Selo, valley of a stream, shrubs, on *Euphorbia* sp., 1♂, May 28, 1960, (leg. Glumac); valley of the river Radika, shrubs, on leaves, 1♀, May 30, 1960, (leg. Glumac), SKO. (Krpač et al, 2001) Mavrovi Anovi, SKO.

New findings: Tetovo, 2♀, July 15, 1961, (leg. Topukova); Radika valley, on the leaves of *Pastinca sativa*, 1♀, August 24, 1961, (leg. Glumac); Mavrovi Anovi, 1♀, July 05, 1975, (leg. Čingovski); Mavrovi Anovi, 2♂, 1♀, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, May 25, 1995, (leg. Krpač); Mavrovo, s. Nichpur, 1♀, May 10, 1996. (leg. Krpač); Mavrovi Anovi, 3♀, June 05, 1996, (leg. Krpač); Mavrovi Anovi, meadow, on *Petasites hybridus*, *Plantago lanceolata* and *Ranunculus repens*, 3♀, May 16, 2003, (leg. Krpač); Mavrovi Anovi, meadow, on *Ranunculus repens*, and *Euphorbia* sp., 3♂, 5♀, May 17, 2003, (leg. Krpač), SKO.

Comment: *M. mellinum* is widespread and one of the most common species of this genus on the Balkan Peninsula. Macedonia and the Sharr Mountains, is also one of the most common and numerous species, registered at different altitudes and in different habitat types.

78. *Melanostoma scalare* (Fabricius, 1794)

Habitat type: Several types of moist mesophilic coniferous and deciduous forests, but often in open terrains in European parts of Atlantic climate; common in urban areas, near borders, on various farms and gardens, in parks and along paths in coniferous plantations.

Adult: Adults live next to forest paths, clearings, fences, in gardens, visits to streams are especially frequent; fly low above-ground vegetation and shrubs; males hover next to bushes in bloom, or the shade under trees, up to 3m above the ground.

Host plant: Gramineae; Umbelliferae; *Allium ursinum*, *Arbutus unedo*, *Caltha*, *Euphorbia*, *Ilex*, *Leontodon*, *Plantago*, *Prunus spinosa*, *Ranunculus*, *Salix repens*, *Taraxacum*, *Veronica*, *Roripa* sp., *Ranunculus* sp., *Anthriscus sylvestris*, *Sinapis* sp., *Angelica* sp. and Sambucus sp.

Flight period: March / September.

Larva: It was described by Dusek and Laska (1959), based on a fully developed larva, found on an apricot tree, and in a sod of *Dactylis* grass.

Distribution: From Iceland, Finland, and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean and North Africa; from Ireland in the east through most of Europe, to the European part of Russia; in Siberia from the Urals to the Pacific coast (Kuril Islands); in the eastern parts of the Afrotropic region, south to Zimbabwe; through the Oriental region to New Guinea (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Collected from several localities.

Published findings: (Glumac, 1968: 868); (Krpač et al, 2001: 183).

Material: 8 specimens (6♂, 2♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, the valley of mountain streams, on flowers, 2♂, 1♀, May 30, 1960, (leg. Glumac) SKO; (Krpač et al, 2001): at all sites in the Mavrovo National Park.

New findings: Sharr Mountains, Popova Šapka, 1♂, July 15-26, 1955, (leg. Joksimović); Sharr Mountains, stream valley, on *Roripa* sp., 1♀, May 28, 1960, (leg. Glumac); Mavrovo, s. Nichpur, 3♂, May 10, 1996., (leg. Krpač) SKO.

Comment: Widespread species throughout the Balkan Peninsula. It is not a rare species in Macedonia, as stated in Glumac (1968). Our research has shown that the species is widespread, seen in several localities, in different habitats with different altitudes.

Genus *Meliscaeva* Frey, 1946

In Europe, the genus *Meliscaeva* is represented by two widespread species in different forest ecosystems. Some taxonomies of the genus species *Meliscaeva* are included in the genus *Episyrphus*.

Both species of *M. auricollis* (Meigen, 1822) and *M. cinctella* (Zetterstedt, 1843) have been registered in Macedonia and Sharr Mountains. The larvae of this genus feed on aphids during development.

79. *Meliscaeva auricollis* (Meigen, 1822)
Epistrophe auricollis Meigen, 1822 in Glumac, 1968

Habitat type: Several forest types: deciduous, deciduous evergreen and coniferous plantations.

Adult: Adults reside along forest paths and on glades; they fly in the treetops; males hover above forest paths at 2-3m height.

Host plant: white Umbelliferae; *Arbutus unedo*, *Chaerophyllum*, *Euonymus*, *Euphorbia* (*E. cyparisias*) *Hedera*, *Rubus*, *Salix*, *Sorbus*, *Viburnum opulus*, *Heracleum sphondylium*, *Gallium cruciatum*, *Trolius* sp., *Sambucus* sp., *Anthriscus sylvestris*, *Ranunculus* sp., *Pastinaca sativa* and *Pinus mugho*. De Buck (1990) gives an extended list of visited flowers.

Flight period: March / October (February and November in southern Europe).

Larva: Described by Dixon (1960), who found it on *Sarothamnus*; larvae are aphidophagous on trees, shrubs, and tall plants, as well as on some crops (*Nicotiana*, *Triticum*).

Distribution: Finland, Scandinavia, and the Faroe Islands (Jensen, 2001), south to the Iberian Peninsula and the Mediterranean (including Cyprus, Malta, and Crete), Canary Islands, North Africa, Turkey, and Israel; from Ireland, east across much of Europe to the European part of Russia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species.

Published findings: as *Epistrophe auricollis* in Glumac (1968: 868); (Krpač et al, 2001: 182).

Material: 14 specimens (12♂, 2♀).

Verified literature data: as *E. auricollis* in Glumac (1968): Tetovo, Vata Bogunović, meadow, on the flower of *Heracleum sphondylium*, 1♂, June 07, 1959, (leg. Glumac); valley of the river Radika, on leaves, 1♂, May 31, 1960, (leg. Glumac); Mavrovi Anovi, valley of the stream, on the flower of *Pastinaca sativa*, 2♀, August 01-03, 1961, (leg. Glumac) SKO; (Krpač et al, 2001): Mavrovi Anovi, SKO.

New findings: Mavrovi Anovi, 1♂, July 09, 1981, (leg. T. Ivanovski); Mavrovi Anovi, 7♂, July 09, 1991, (leg. T. Ivanovski); Mavrovo, s. Nichpur, 1♂, May 10, 1996. (leg. Krpač); Mavrovi Anovi, 1♂, July 10, 1998, (leg. Krpač), SKO.

Comment: This species is widespread on the Balkan Peninsula. In Macedonia, it is common and numerous, registered at numerous localities, in different biotopes at different altitudes.

80. *Meliscaeva cinctella* (Zetterstedt, 1843)
Epistrophe cinctella (Zetterstedt, 1843) in Glumac, 1968

Habitat type: Deciduous and coniferous forests, coniferous plantations, and shrubs, in urban areas, on fences, in suburban gardens and parks.

Adult: Adults reside on forest glades and along forest paths; they fly around the leaves of low-growing plants, shrubs, bushes, and trees; males hover above forest paths at 3-5m above the ground.

Host plant: White Umbelliferae; *Acer pseudoplatanus*, *Crataegus*, *Euphorbia*, *Ilex*, *Ligustrum*, *Lonicera periclymenum*, *Origanum vulgare*, *Polygonum cuspidatum*, *Potentilla erecta*, *Prunus spinosa*, *Ranunculus*, *Rhododendron*, *Rubus fruticosus*, *Rubus idaeus*, *Salix*, *Sambucus*, *Senecio jacobaea*, *Solidago virgaurea*, *Sorbus aucuparia*, *Taraxacum*, *Lamsana* sp., *Chrysanthemum* sp., *Daucus carota* and *Tanacetum* sp.

Flying period: April / September, and the most massive in May, June, and August and sometimes in October.

Larva: Described by Dixon (1960); the larvae feed on aphids on shrubs, bushes, and trees; Kula (1982) reports on larvae that overwinter between leaves on the ground of a spruce forest (*Picea*) (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean and North Africa; from Ireland, in the east through most of Europe, in Turkey and the European part of Russia; in Siberia from the Urals to the Pacific coast (Kuril Islands); in North America from Alaska, south to California and Colorado (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: According to Glumac (1968), this species is very rare in Macedonia.

Published findings: as *E. cinctella* in Glumac (1968: 873); (Krpač et al, 2001: 181-182).

Material: 6 specimens (4♂, 2♀).

Verified literature data: as *E. cinctella* (Glumac, 1968): Mavrovi Anovi, mixed forest, on a flower *Euphorbia* sp., 2♂, 30.05.1960, (leg. Glumac); Mavrovi Anovi, the valley of a mountain stream, on flowers, 1♀, 30.05.1960, (leg. Glumac); Mavrovi Anovi, mixed forest, on the flower of *Daucus carota* and *Tanacetum* sp., 1♂, 1♀, 01-03.08.1961, (leg. Glumac) SKO; (Krpač et al, 2001): Mavrovi Anovi; Pilana; Trnica.

New findings: Mavrovi Anovi, 1♂, 1.07.1996, (leg. Krpač), SKO.

Comment: This species is registered on entire Balkan Peninsula, except in Bosnia and Herzegovina. Our research has shown that *M. cinctella* is widespread in Macedonia and not very rare as stated by Glumac (1968: 873).

Genus *Merodon* Meigen, 1803

Merodon is the second most numerous genus in the family Syrfidae. More than 50 species have been registered for the territory of the European continent (Peck, 1988). The largest number of representatives of this genus is widespread in the Mediterranean belt and southern Europe. Many species are poorly known and inadequately treated in determination keys. There is no key based on which all European species would be separated, but with the revision, Hurkmans (1993) clarified the nomenclature and status of many of them. In Macedonia, 27 species have been identified, of which *M. telmateia* Hurkmans, 1987 has not been registered in the Balkans, and 2 species: *M. spinitarsis* Paramonov, 1929 and *M. trebevicensis* Strobl 1900 were registered for the first time in Macedonia. 6 species have been confirmed on Sharr Mountains. The larvae of this genus are phytophagous, they develop in bulbs. Many larvae are related to certain host plants (monophagous species). Their specialization in nutrition has led to the emergence of such many species of the genus *Merodon*.

81. *Merodon aberrans* Egger, 1860
Lampetia aberrans Egger, 1860 in Glumac, 1968

Habitat type: Carbonate Mountain pastures; open spaces in the *Abies* forest zone rich in vegetation.

Adult: Adult males rest on paths on bare ground; they fly fast and low over the surrounding vegetation, chasing other males or chasing females; females fly above vegetation and on clearings overgrown with high vegetation; Hurkmans and Hayat (1997) described their behavior in more details.

Host plant: Umbelliferae, *Dianthus* sp; *Ranunculus* sp.,

Flight period: May / July and August at higher altitudes.

Larva: not described (Speight, 2001).

Distribution: Central Europe, from Germany, the Czech Republic, and the Alps (France, Switzerland, Austria) to Hungary and Romania, further in Ukraine and southern Russia; in southern Europe from the mountainous parts of Portugal and Spain, in the east to Italy, Albania, the former Yugoslavia, Greece, and Turkey, around the Mediterranean (Lebanon), in North Africa (Morocco), and Mediterranean islands such as Crete (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, Greece, and Albania.

Macedonia: The species is registered in several localities.

Published findings: (Krpač et al, 2001: 183).

Material: 11 specimens (7♂, 4♀).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi; valley of the river Radika.

New findings: Sharr Mountains, Ljuboten, 2♂, 1♀, June 28,1955, (leg. Čingovski); Mavrovi Anovi, 1♂, July 02, 1957, (leg. Čingovski); Mavrovi Anovi, 1♂, July 24, 1973, (leg. Čingovski); Mavrovi Anovi, 1♀, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 1♂, June 29, 1979, (leg. Čingovski); Mavrovi Anovi, 1♂, July 06, 1988, (leg. Krpač); the valley of the river Radika, upper course, 2♀, July 04, 1995, (leg. Krpač): valley of the river Radika, Pilana, 1♂, July 04, 1995, (leg. Krpač), SKO.

Comment: *M. aberrans* is numerous and widespread species of the genus *Merodon* on the Balkan Peninsula. It is a common and numerous species in Macedonia. We found it at different habitat types and altitudes.

82. ***Merodon clavipes*** **(Fabricius, 1794)**
Lampetia clavipes Fabricius, 1781 f. *typica* in Glumac, 1968

Lampetia clavipes Fabricius, 1781 var. *senilis* in Glumac, 1968

Habitat type: Open spaces with sparse vegetation; semi-dry and rocky pastures.

Adult: No data.

Host plant: *Euphorbia*, *Leontodon*, *Solidago*, *Orlaya grandiflora*, *Heracleum sphondilum*, *Pastinaca sativa*, *Trollius* sp. i *Sambucus* sp., *Anthriscus* sp. and *Dianthus* sp.

Flight period: May / August.

Larva: Not described (Speight, 2001).

Distribution: From northern France to the Mediterranean (including Corsica, Sicily, Sardinia, and Crete) and northern Africa; from Portugal and Spain through Central and Southern Europe to Greece, Romania, Ukraine, and Turkey (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species.

Published findings: as *L. clavipes* f. *typica*; *L. clavipes* var. *senilis* in Glumac (1968: 856).

Material: 2 specimens (1♂, 1♀).

Verified literature: as *L. clavipes* f. *typica*; *L. clavipes* var. *senilis* in Glumac (1968): Azajnica, near the river Radika, wet meadow, on *Heracleum sphondilum*, 1♂, June 10, 1959, (leg. Glumac). IBNS.

New findings: r. Radika, upper stream, 1♀, 04.07.1995, (leg. Krpač). SKO.

Comment: *M. clavipes* is a Mediterranean species, widespread in the Balkan Peninsula. It is common in Macedonia, registered in rocky, open habitats on mountains.

83. ***Merodon equestris*** **(Fabricius, 1794)**
Lampetia equestris Fabr. var. *transversalis* Meigen, 1822 in Glumac, 1968

Habitat type: Deciduous forests; in urban areas, suburban gardens, and horticultural land; in the Alps on alpine pastures.

Adult: Adults fly fast between ground vegetation, along paths and forest clearings, above riverbeds; they often rest on bare ground.

Host plant: White Umbelliferae: *Ajuga*, *Aster*, *Cirsium*, *Crepis*, *Eschcholzia californica*, *Hieracium*, *Knautia arvensis*, *Meconopsis cambrica*, *Papaver*, *Ranunuculus*, *Rubus idaeus*, *Senecio* and *Pastinaca sativa*.

Flight period: May / July (April in southern Europe, and August at higher altitudes).

Larva: Described by Hodson (1932) and Heiss (1938), discovered in Liliaceae bulbs; in horticultural plants (e.g., *Narcis*) it is marked as a pest.

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean, including North Africa; from Ireland, in the east through most of Europe, to the European part of Russia; in Japan; in North America, from British Columbia to California (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Macedonia, Bulgaria, and Greece.

Macedonia: Very rare species.

Published findings: as *L. equestris* var. *transversalis* in Glumac (968: 61).

Material: 2 specimens (1♂ 1♀).

Verified literature data: *as L. equestris* var. *transversalis* in Glumac (1968): Mavrovo, valley of a stream, meadow, on *Pastinaca sativa*, 1♀, August 01-03, 1961, (leg. Glumac) IBNS.

New findings: Mavrovi Anovi, 1♂, June 24, 1970, (leg. Čingovski); SKO.

Comment: *M. equestris* in Macedonia is very rare species, registered at several localities in Mavrovo region in individual specimens. This is one of very variable species of genus and is good imitator of bumblebees.

84. ***Merodon loewi*** **van der Goot, 1964**
sub. *Lampetia graeca* Loew, 1862 in Glumac, 1968

Habitat type: Wetland meadows.

Adult: Adults are found on shrub leaves and on the ground.

Host plant: On the flowers and leaves of *Chrysanthemum* sp., *Lapsona* sp., *Taraxacum officinale*, *Ranunculus millefoliatus* and *Achillea* sp.

Flight period: June.

Larva: Not described.

Distribution: Mediterranean and Asia Minor.

Balkan Peninsula: Albania, Macedonia, Bulgaria, and Greece.

Macedonia: It is a rare species in Macedonia (Glumac, 1968: 856).

Published findings: as *L. graeca* in Glumac (1968: 856); (Vujić, 1995: 48).

Material: 4 specimens (3♂, 1♀) SKO.

New findings: Mavrovi Anovi, 3♂, 1♀, June 26,1991, (leg. Krpač).

Comment: Glumac (1968) cites one specimen as *L. graeca*, the same was revised in Vujić (1995) and refers to the species *M. loewi*. Therefore, we exclude this name (*L. graeca*) from the fauna of hoverflies in Macedonia. According to Peck (1988: 171), *M. loewi* is the new name for *M. graecus* or the original younger homonym *M. graecus* Walker, 1852.

85. *Merodon nigritarsis* Rondani, 1845

Lampetia spinipes Fabr. var. *nigritarsis* Rondani, 1845 in Glumac, 1968

Lampetia sp. close *spinipes* group in Glumac, 1968

Habitat type: Forests and open spaces; dry and semi-dry pastures rich in plants, as well as forest glades in the forest *Quercus ilex*; and maquis, old *Pinus,* and Mediterranean shrubs.

Adult: Adults fly fast and low above sparse ground vegetation; resting on bare ground.

Host plant: *Orlaya grandiflora*, *Dianthus* sp., *Euphorbia* sp., *Alyssum* sp., *Pastinaca* sp., *Malva* sp., *Mentha* sp., *Anthemis* sp. and *Sedum* sp.

Flight period: May / August.

Larva: Not described (Speight, 2001).

Distribution: Habitat data are inaccurate because this species mixes with Merodon avidus, but is known to be present in Austria, southern France, Greece, Hungary, Italy, the former Yugoslavia, Poland, Spain, Switzerland, and Turkey (Speight, 2001).

Balkan Peninsula: Croatia, Serbia, Macedonia, and Greece.

Macedonia: It is a common species in Macedonia.

Published findings: as *L. spinipes* var. *nigritarsis* L. in Glumac (1968: 857); as *Lampetia* sp. close to the *spinipes* group in Glumac (1968: 858).

Material: 5 specimens (3♂, 2♀).

Verified literature data: as *L. spinipes* var. *nigritarsis* (Glumac, 1968): Mavrovi Anovi, stream valley, on *Pastinaca* sp., *Malva* sp. and *Mentha* sp., 1♂, August 01-03, 1961, (leg. Glumac) SKO.

New findings: Mavrovo, 2♂, 2♀, July 02, 1975, (leg. Čingovski). SKO.

Comment: By revising the genus, *Merodon* Hurkmans (1993) reintroduced the species name by graphically depicting the male genital apparatus and again describing and marking in detail thus confirming the differences between *M. nigritarsis* and related species. In appearance, *M. nigritarsis* is like the species *M. avidus* (Rossi). Vujić et al (1998a) present comparative characteristics of male

genitalia useful for separating *M. nigritarsis* from *M. avidus*. This is one of the species of genus *Merodon* that is widespread in the territory of Macedonia and located at different altitudes.

86. ***Merodon ruficornis*** **Meigen, 1822**
syn. *Merodon recurvus* Strobl, 1898 in Krpač et al, 2001

Habitat type: open spaces (meadows).

Adult: No data.

Host plant: *Ornithogalum* sp.

Flight period: From mid-April / early May (Vujić et al, 1998b).

Larva: No data.

Distribution: from Belgium, in the south to the Mediterranean and North Africa, and in the east through Central (Germany, Switzerland, Austria) and southern Europe to Greece, Romania, the Caucasus and Armenia (Speight, 2001).

Balkan Peninsula: Bosnia and Herzegovina, Serbia, Macedonia, Bulgaria, and Greece. **Macedonia:** Registered at several locations.

Published findings: (Krpač et al, 2001: 172).

Material: 4 specimens (3♂, 1♀) SKO.

Verified literature data: as *M. recurvus* in Krpač et al (2001).

New findings: Mavrovi Anovi, beech forest, 3♂, June 26, 1991, (leg. Krpač); Mavrovi Anovi, 1♀, July 26, 1991, (leg. T. Ivanovski), SKO.

Comment: Very important endemic species (Vujić et al, 1998b); in Macedonia is registered in a few localities.

Genus *Myathropa* Rondani, 1845

The genus *Myathropa* is represented by one species in Europe (van der Goot, 1981), except for the island of Madeira where another endemic species of *M. usta* has been registered (Wollaston, 1859). The presence of the widespread species *M. florea* (Linnaeus, 1758) has been registered in Macedonia and Sharr Mountains. The larvae of this genus are mostly dendrolimnocolnae (they develop in the hollows of rotten trees), belonging to the group of aquatic saprophages.

87. ***Myathropa florea*** **(Linnaeus, 1758)**
Myiatropa florea L. var. *flavofemorata* Strobl. in Glumac, 1968

Myiatropa florea L. var. *nigrotarsata* (Schinner, 1862) in Glumac, 1968

Habitat type: Several types of deciduous forests; in urban areas, on wet pastures and in suburban gardens.

Adult: Adults reside on forest glades, paths, and hedges; fly fast and at altitudes above 2m; they rest on the rocks next to streams, ponds, and puddles.

Host plant: White Umbelliferae; *Castanea*, *Convolvulus*, *Crataegus*, *Chaerophyllum*, *Euonymus*, *Filipendula*, *Hedera*, *Rhododendron*, *Rubus*, *Sambucus*, *Solidago*, *Sorbus*, *Viburnum opulus*, *Sambucus ebulus*, *Verbascum* sp., *Mentha* sp., Eryngium *campestre* and *Hedera helix*.

Flight period: May / October, and the most massive in June and August.

Larva: Described by Hartley (1961) and Rotheray (1994); the larvae are aquatic, found in stagnant waters, in rot, and water full of root cavities, on the branches of the *Fagus*, *Betula*, and *Quercus* trees; the larva develops in moist cow manure (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean, the Canary Islands and North Africa; from Ireland, east across Eurasia to the Pacific coast (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Numerous and very common species.

Published findings: (Glumac, 1968: 848-849); (Krpač et al, 2001: 182).

Material: 14 specimens (10♂, 4♀).

Verified literature data: as *M. florea* var. *flavofemorata* in Glumac (1968): Mavrovi Anovi, stream valley, shrubs, 1♂, August 27, 1966, (leg. Glumac) SKO; as *M. florea* var. *nigrotarsata* in Glumac (1968): Mavrovi Anovi, stream valley, shrubs, 1♂, August 27, 1966, (leg. Glumac); Radika the valley, on *Verbascum* sp., 1♂, August 28, 1966, (leg. Glumac), SKO. (Krpač et al, 2001): Mavrovo, 1♂, 1♀, August 12, 1990, (leg. Krpač); Mavrovo, the village of Nikiforovo, 1♂, July 06, 1995, (leg. Krpač) SKO.

New findings: Mavrovi Anovi, 1♂, June 24, 1970, (leg. Čingovski); Mavrovi Anovi, 1♂, July 03, 1971, (leg. Čingovski); Mavrovi Anovi, 1♀, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, July 03, 1975, (leg. Čingovski); Sharr Mountains, Tri Vodi, 1♂, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♂, 1♀, May 24, 1995, (Leg. Krpač); Mavrovo, Pilana, 1♂, August 11, 2004., (leg. Krpač), SKO.

Comment: The species is widespread in the Balkan Peninsula. It is numerous and very common species in Macedonia, most common in areas influenced by the Mediterranean and sub-Mediterranean climate. In Glumac, (1972) six varieties are listed of which: *M. florea* var. *flavofemorata* and *M. florea* var. *nigrotarsata* were tested on material belongimg to this species, while for two varieties: *M. florea* L. var. *bigoti* (Macquart, 1850) and *M. florea* L. var. *minima* Glumac, 1954, we did not found specimens in nonexisting collections of SKO and IBNS.

Genus *Myolepta* Newman, 1838

Eight species of this genus have been registered in Europe (Peck, 1988). 5 species are known in Macedonia, of which one species is known for Sharr Mountains. Larvae of species of the genus *Myolepta* are terrestrial saprophages, developing in rotten trunks. The genus *Myolepta* is on the list of endangered saproxyl genera in Europe (Speight, 1989).

88. *Myolepta dubia* (Fabricius, 1805)
syn. *Myolepta luteola* (Gmelin, 1790) in Glumac, 1968

Habitat type: Deciduous old alluvial forests, mesophilic *Fagus*, acidophilic *Quercus*, thermophilic forests of *Quercus* and evergreen forests of *Quercus ilex* and *Q. suber* and old orchards.

Adult: Adults reside in the treetops; visit the flowers of low-growing plants, along the edges of forest paths; they land on the leaves of *Rubus*; by the wood stream; females walk around the hollows of trees and rotting *Quercus* trees.

Host plant: White Umbelliferae, *Cistus*, *Crataegus*, *Potentilla erecta*, *Prunus*, *Rubus*, *Spiraea* sp., *Orlaya grandiflora*, *Euphorbia* sp. and *Allyssum* sp.

Flying period: Mid-May / August, and most massive in June.

Larva: Described by Dusek and Laska (1960a), collected from the moist cavities of the *Populus italica* tree; Hartley (1961) found larvae in the rotten and damp cavity of old *Fagus*. Larvae were also found under the bark of old *Acer* trees; larval development takes more than one year; the species overwinters as a larva (Speight, 2001).

Distribution: From southern Sweden to Spain and the Mediterranean; from Britain (southern England), east through central and southern Europe (Italy, former Yugoslavia) to the European part of Russia (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: The species is known and registered in several localities.

Published findings: as *M. luteola* in Glumac (1968: 854).

Material: 1 specimen (1♀).

Verified literature data: as *M. luteola* (Glumac, 1968).

New findings: Tetovo, v. Vratnica, 1♀, July 26, 1971, (leg. Čingovski), SKO.

Comment: This species is common, registered in several localities in Macedonia, but found in individual specimens. In recent literature data (Glumac, 1968; Glumac, 1972; Vujić and Glumac, 1994), this species appears under its synonym *M. luteola*. Thomson and Pont (1994) again describe *M. dubia* and point out that the name of the species *M. luteola* is incorrect and that the name of the neotype of *M. dubia* derives from Fabricius' species "*Thereva dubia*".

Genus *Neoascia* Williston, 1886

The genus *Neoascia* in Europe is represented by 9 species (Barkemyer and Claussen, 1986). 5 species have been registered in Macedonia and Sharr Mountains: *N. annexa* (Muller, 1776), *N. meticulosa* (Scopoli, 1763), *N. obliqua* Coe, 1940, *N. podagrica* (Fabricius, 1775) and *N. unifasciata* (Strobl, 1898). The larvae of the genus are aquatic saprophages, they feed on decaying substances.

89. *Neoascia annexa* (Muller, 1776)
syn. *Neoascia floralis* (Meigen, 1822) in Glumac, 1968

Habitat type: *Fagus* and *Picea* forests.

Adult: Adults reside along stream banks; fly between coastal vegetation.

Host plant: Umbelliferae; *Ajuga*, *Caltha*, *Galium*, *Potentilla*, *Ranunculus*, *Verbascum* sp. and *Euphorbia polychroma*.

Flight period: May / June and July / August at higher altitudes.

Larva: Described by Maibach and Goeldlin (1993); larvae and pupae were collected from water-soaked plant debris along streams in the *Fagus* and *Picea* forests (Speight, 2001).

Distribution: From southern Sweden to the Pyrenees and northern Spain; from Belgium, in the east through the mountainous parts of Central and Southern Europe (Italy and Yugoslavia), the European part of Russia and the Caucasus (Speight, 2004).

Balkan Peninsula: Slovenia, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Registered at several locations.

Published findings: as *N. floralis* in Glumac (1968: 850); (Krpač et al, 2001: 172)

Material: 7 specimens (4♂, 3♀).

Verified literature data: as *N. floralis* in Glumac (1968): Gostivar, Vrutok, shrubs, on the leaves of

Verbascum sp., 1♀, August 29, 1959, (leg. Glumac); Tetovo, Vata Bogunović, meadow, on the flower of *Ranunculus* sp., 1♀, June 7, 1959, (leg. Glumac), SKO. (Krpač et al, 2001): r. Radika, Lukovo Pole, 1♀, May 25, 1995, (leg. Krpač); valley of the river Radika, 3♂, June 06, 1996, (leg. Krpač); Mavrovi Anovi, 1♂, June 06, 1996. (leg. Krpač) SKO.

Comment: *N. annexa* is registered on the large number of mountains in Europe, but often occurs in lowland areas as well. In Glumac (1968) this species is listed under the name *N. floralis*. In Macedonia, this species is registered in several localities.

90. *Neoascia meticulosa* (Scopoli, 1763)

Habitat type: Wetlands, lakes, and stream banks in open communities of tall plants and sedges.

Adult: Adults fly low between high vegetation of Cyperaceae.

Host plant: White Umbelliferae; *Anemone nemorosa*, *Caltha*, *Cardamine*, *Ficaria verna*, *Galium*, *Prunus avium*, *Ranunculus*, *Salix*, *Sorbus aucuparia*, *Taraxacum* and *Petasites* sp.

Flight period: End of April. In some years, the second generation appears in July / August.

Larva: Larva and puppet were described by Hartley (1961) and Maibach and Goeldlin (1993); larva is aquatic and can be found under the leaves of the rotten *Typha* tree and below in water surface (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to northern Spain, the Alps and the former Yugoslavia; from Ireland, in the east through northern and central Europe, to the European part of Russia, through Siberia to Lake Baikal.

Balkan Peninsula: Slovenia, Serbia, and Macedonia.

Macedonia: Registered in one locality.

Published findings: (Krpač, 2006).

Material: 2 specimens (1♂, 1♀) SKO.

New findings: r. Radika, Lukovo Pole, on the leaves of *Petasites* sp., 1♂, 1♀, May 25, 1995, (leg. Krpač).

Comment: The species is registered only in a few European countries. It is rare species, and in Macedonia is registered only in one locality in the upper course of the river Radika.

91. *Neoascia obliqua* Coe, 1940
sub. *Neoascia podagrica* (Fabricius, 1775) in Glumac, 1968 (in part)

Habitat type: Wetlands and forests; along the banks of forest streams to the upper zone of *Fagus* and *Pices*; lakeshores and streams, in a community of tall plants in sheltered places.

Adult: Adults reside in coastal lush vegetation; they fly and rest on vegetation by the water.

Host plant: White Umbelliferae; *Galium*, *Ranunculus*, *Taraxacum*, *Euphorbia polychroma*, *Orlaya*, *Heracleum* and *Petasites* sp.

Flight period: Late April / early August.

Larva: Not described (Speight, 2001).

Distribution: From southern Sweden to the Pyrenees; from Ireland to the east via Central Europe in European parts of Russia and in the former Yugoslavia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: It is found in the number of localities.

Published findings: sub. *N. podagrica* in Glumac (1968) (in part); (Krpač et al, 2001: 172-173).

Material: 17 specimens (16♂, 1♀) SKO.

Wrong identification: (Glumac, 1968) (in part): Sharr Mountains, stream valley, on leaves, 1♂, August 28, 1961, (leg. et det. Glumac, sub. *N. podagrica = N. obliqua*) SKO.

Verified literature data: (Krpač et al, 2001): r. Radika, Lukovo Pole, on the leaves of *Petasites* sp., 7♂, May 25, 1995, (leg. Krpač); r. Radika, Lukovo Pole, on the leaves of *Petasites* sp., 7♂, 1♀, May 10, 1996, (leg. Krpač); Mavrovi Anovi, meadow, on the flower of *Plantago lanceolata*, 1♂, May 16, 2003, (leg. Krpač) SKO.

Comment: This species is mountainous and often mixed with close N. *podagrica*. In Macedonia, the population of this species is numerous; and found in numerous localities.

92. *Neoascia podagrica* (Fabricius, 1775)

Habitat type: Forests and wetlands; alluvial forests, lake shores and urban areas; it is found on wet pastures, along channels, farms, and other places were rich in organic waste, including the edges of channels, suburban gardens, parks, and landfills.

Adult: Adults fly low between coastal vegetation plants.

Host plant: White Umbelliferae; *Achillea millefolium*, *Allium ursinum*, *Caltha*, *Chelidonium*, *Convolvulus*, *Crataegus*, *Euphorbia*, *Leontodon*, *Menyanthes*, *Plantago*, *Potentilla erecta*, *Ranunculus*, *Salix repens*, *Senecio jacobaea* and *Taraxacum*.

Flight period: April / October (March in southern Europe).

Larva: The larva was described by Hartley (1961) and Maibach and Goeldlin (1993) found in cow manure and compost; the larva is subaquatic; found in cow mud manure; Dusek and Laska (1962) found it in the root of *Petasites* together with the larvae of *Cheilosia canicularis* (Speight, 2001).

Distribution: From Phenoscandinavia, in the south to the Iberian Peninsula and the Mediterranean, including Madeira, Cyprus, Crete; North Africa; from Ireland, in the east through northern, central, and southern Europe (Italy, former Yugoslavia, Greece) to Turkey and Israel; the European part of Russia and western Siberia, all the way to Cis Baikal (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: In some localities, this species is numerous.

Published findings: (Glumac, 1968: 850) (in part); (Krpač et al, 2001: 183).

Material: 5 specimens (2♂, 3♀).

Verified literature data: (Glumac, 1968) (in part): Mavrovi Anovi, dolina potoka, na šiblju, 2♂, 1♀, August 27, 1966, (leg Glumac) SKO; (Krpač et al, 2001): r. Radika, Lukovo Pole, 1♀, September 06, 1994, (leg. Krpač), SKO.

New findings: Mavrovi Anovi, on *Petasites hybridus*, 1♀, May 16, 2003, (leg. Krpač), SKO.

Comment: *N. podagrica* is the most common and most numerous species of this genus. In Macedonia, it can be found in different habitats and different altitudes.

93. *Neoascia unifasciata* (Strobl, 1898)

Habitat type: Wetlands; along streams, wet pastures, and clearings, in alluvial forests of *Salix*, *Alnus*, and *Picea*. Habitats of this species have been described in detail by Treiber (1991).

Adult: Adults fly near lush coastal vegetation, near *Petasites*.

Host plant: White Umbelliferae; *Euphorbia cyparissias*, *Stellaria*.

Flight period: End of May.

Larva: Not described (Speight, 2001).

Distribution: The distribution of the species has not yet been established; its presence in Germany, the Netherlands, Belgium, Switzerland, and Austria is known (Speight, 2001).

Balkan Peninsula: Slovenia, Serbia, Macedonia, and Greece.

Macedonia: The species was found in one locality.

Published findings: Krpač et al, 2001: 173.

Material: 1 specimen (1♀) SKO.

Verified literature data: (Krpač et al, 2001): r. Radika, Lukovo Pole, 1♀, May 10, 1996., (leg. Krpač), SKO.

Comment: *N. unifasciata* is a species whose distribution has not yet been precisely established. Its presence is known in some European countries. It has been insufficiently researched in Macedonia, and so far, it has been registered at only one locality in the valley of the upper course of the river Radika.

Genus *Orthonevra* Macquart, 1829

Orthonevra is one of the genera that needs revision. One of the better keys for species determination is the key to van der Goot (1981). Maibach et al, (1994a) separate the genus *Riponnesia* from the genus *Orthonevra*. Vujić (1999b) adds another species, *O. montana*. According to Speight (2001), the genus *Orthonevra* in Europe is represented by 10 species, of which only three are registered in Macedonia: *O. frontalis* (Loew, 1843), *O. montana* Vujić, 1999b and *O. nobilis* (Fallen, 1817). Two species of this genus have been registered on the Sharr Mountains. The larvae develop by feeding on the tissues of aquatic plants.

94. *Orthonevra montana* Vujić, 1999

Habitat type: Forests and freshwater; near streams, at an altitude of over 1000m, in the airy forests of *Picea* and *Pinus* (on the Balkan Peninsula - Vujić, 1999b).

Adult: Adults fly low between vegetation in the immediate vicinity of stagnant waters; they rest on the leaves of plants protruding from the water, such as *Petasites*.

Host plant: White Umbelliferae; *Ranunculus* (Vujić, 1999b).

Flight period: Mid-May / late July (Vujić, 1999b).

Larva: Is not described (Speight, 2001).

Distribution: Balkan Peninsula (Bosnia and Herzegovina, Montenegro, Serbia, Macedonia and Greece).

Macedonia: It was found in only two locations.

Published findings: (Vujić, 1999b: 412).

Material: 2 specimens (1♂, 1♀).

Verified literature data: (Vujić, 1999b): Sharr Mountains, DM-85, 1♀, July 27, 1998, (leg. Vujić), (IBSN).

New findings: Mavrovi Anovi, 1♂, 24.05.1995, (leg. Krpač), SKO.

Comment: For now, this species is registered only on the mountains of the Balkan Peninsula. It is rare species in Macedonia, recorded only in a few localities. According to Meilbach et al, (1994a), *O.*

montana belongs to the *nobilis* group and is very close to *O. tristis* (Loew, 1871). These two species can be determined based on the structure of the male genital apparatus (Vujić, 1999b).

95. ***Orthonevra nobilis*** **(Fallen, 1817)**
sub. *Liogaster metalina* (Fabricius, 1776) in Glumac, 1968 (in part)

Habitat type: Freshwater, wetlands, and forests; close to springs, swamps and at the edges of the wet forests of *Fagus*, and on wet pastures.

Adult: Adults fly between low vegetation, usually near water.

Host plant: White Umbelliferae; *Fragaria*, *Galium*, *Potentilla erecta*, *Ranunculus*, *Lapsana* sp. and *Chrysanthemum* sp.

Flight period: May / August, and in April in southern Europe.

Larva: Described by Maibach and Goeldlin (1994), collected near springs in mud enriched with organic material.

Distribution: From central Norway, in the south to the Pyrenees and central Spain; from Ireland, in the east through northern and central Europe to the European part of Russia and Ukraine; there are also data from the mountainous parts of Italy, the former Yugoslavia, Greece and Turkey; from the Caucasus through Siberia to the Far East in China (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Registered at several locations.

Published findings: (Vujić, 1995: 48); (Vujić, 1999b: 414).

Material: 2 specimens (2♀).

Verified literature data: (Vujić, 1995): Mavrovo, 1♀, August 27, 1966, IBNS. (Vujić, 1999b):

New findings: Mavrovi Anovi, 1♀, August 27, 1966, (leg Glumac).

Comment: This species occurs throughout the Palearctic and as the most numerous species of the genus on the Balkan Peninsula. In Macedonia, it is registered at several locations.

Genus *Paragus* Latreille, 1804

Paragus is one of the genera whose number of species is not specified, despite detailed revision (Goelglin, 1976). In the last 30 years or so, the genus *Paragus* has been analyzed by many authors (Claussen, 1989; Goeldlin and Lucas, 1981; Kaplan and Thompson, 1981; Marcos-Garsia, 1986; Šimić, 1986; Stanescu, 1977, 1981, 1991, 1992 and Vujić et al, 1999a, 1999b), which supplement the previous European list of genera to about 30 species. If we keep in mind that larger number of taxa has been described recently based on differences in the structure of genital armature of males, thus the number of European species of the genus *Paragus* is even higher. The largest number of species is widespread in the Mediterranean and sub-Mediterranean part of Europe. 10 species have been registered in Macedonia and 2 species on Sharr Mountains. Larvae of this genus are aphidophagous.

96. ***Paragus haemorrhous*** **Meigen, 1822**
sub. *Paragus tibialis* Fabr. f. *typ.* in Glumac, 1968 (in part)

Habitat type: Forests, open spaces, and wetlands; pastures, next to forest paths and meadows.

Adult: Adults fly low between ground vegetation; males hover near the ground and next to the leaves

of low-growing plants; resting on leaves or on the ground.

Host plant: Umbelliferae; *Calluna*, *Jasione montana*, *Matricaria*, *Origanum*, *Polygonum*, *Potentilla anserina*, *P. erecta*, *P. fruticosa*, *Solidago*, *Stellaria*.

Flying period: May / September, most massive in June and August (March / April and October in southern Europe).

Larva: Larva was described by Goeldlin (1974), which he collected on the *Knautia* plant. Afidophagues, feed on aphids on various host plants, including cultures (in southern Europe), such as *Beta*, *Cynara*, and species of the genus *Vicia* (Rojo and Marcos-Garcia, 1998);

Distribution: From northern Norway, in the south to the Iberian Peninsula and the Mediterranean (Sicily and Malta); Madeira, Canary Islands, North Africa, Israel and Turkey; Aphrotropic region; from Ireland, in the east through Central and Southern Europe (Italy, former Yugoslavia) to the European part of Russia; in North America from the Yukon to Costa Rica (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: The species was found at several sites.

Published findings: (Vujić, 1995: 48).

Material: 4 specimens (4♂).

Verified literature data: as *P. tibialis* f. *typ*. in Glumac (1968: 867-868) (in part) (verified 3♂ specimens = *P. haemorrhous*), IBNS.

New findings: Sharr Mountains, Tri Vodi, 1♂, August 30, 1990, (leg. Krpač), SKO.

Comment: This species was often published under the name *P. tibialis* and was recorded on almost entire Balkan Peninsula. In Macedonia, it is registered at several localities. *P. haemorrhous* is a highly variable species (Glumac, 1968). Perhaps future research will show that this is a taxa complex.

97. *Paragus pecchiolii* Rondani, 1857

Paragus majoranae sensu Goeldlin de Tiefenau (1976)

Habitat type: Wide range of biotopes; most often in deciduous forests, river valleys, along the edges of wetlands, in the *Quercus ilex* forest, on dry pastures and gardens.

Adult: Adults reside among low plants and along forest paths; they fly very fast; in the summer heat they fly only early in the morning and in the evening.

Host plant: Umbelliferae; *Euphorbia*, *Galium*, *Matricaria*, *Potentilla erecta*, *Stellaria*, *Thymus*, *Trientalis*, *Veronica*.

Flight period: From May to September and the end of March / October in southern Europe.

Larva: Described by Goeldlin (1974); which he found in *Hedera* and *Prunus*. Rojo and Marcos-Garcia (1998) reared larvae collected among aphids of different crops (*Beta, Cynara*, *Vicia, Zea mays*) and *Carduus*, *Lavatera* and *Rumex* (Speight, 2001).

Distribution: From southern Norway and Denmark, in the south to Spain, to several Mediterranean islands and North Africa; from northern France (Brittany), in the east through Central Europe (Germany, the Czech Republic, Switzerland, Liechtenstein and Austria) to the former Yugoslavia, Romania and the European part of Russia, and in the southeast to Turkey (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, and Greece.

Macedonia: In Macedonia, this species is poorly researched.

Material: 1 specimen (1♂).

New findings: Lukovo Pole, r. Radika, 1♂, September 06, 1994, (leg. Krpač), SKO.

Comment: *P. pecchiolii* is widespread species in Europe. It was found in two locations in Macedonia. According to Sommaggio, (2002: 53-55), based on the analysis of type material, *P. majoranae* is a younger synonym of *P. pecchiolii*.

Genus *Parasyrphus* Matsumura, 1917

The names *Mesosyrphus* (Dusek and Laska, 1967; Hippa, 1968) and *Phalacrodira* (Vockerot, 1969) are used for this genus in recent literature. Peck (1988) lists of 11 species of the genus *Parasyrphus* for Europe; 7 of these are widespread in northern Europe and the Alps. In Macedonia, the genus *Parasyrphus* is represented by *P. punctulatus* (Verrall, 1873) and *P. vittiger* (Zetterstedt, 1843). On the Sharr Mountains, this genus is represented by 1 species. The larvae of the genus *Parasyrphus* feed on aphids.

98. *Parasyrphus punctulatus* (Verrall, 1873)
sub. *Syrphus bucculatus* Rondani, 1857 in Glumac, 1968

Habitat type: Deciduous, coniferous forests and coniferous plantations; found in forests of *Quercus*, *Fraxinus*, *Betula*, *Salix*, and *Alnus*, as well as in pine or *Larix plantations*; in suburban gardens and old orchards.
Adult: Adults fly between the treetops; go down to visit the flowers; fly around the leaves of coniferous and deciduous trees, at a height above 2m; often resting on leaves; males hover near trees, on forest clearings, and along paths, at a height above 2m.

Host plant: White Umbelliferae; *Acer pseudoplatanus*, *Aliaria*, *Anemone nemorosa*, *Caltha*, *Cardamine*, *Crataegus*, *Euphorbia*, *Ilex*, *Ligustrum*, *Meum*, *Oxalis*, *Prunus cerasus*, *P. laurocerasus*, *P. spinosa*, *Ranunculus*, muški *Salix*, *Sambucus racemosa*, *Sorbus aucuparia*, *Taraxacum*, *Tussilago*, *Ilex*, *Viburnum opulus*.
Flight period: Mid-April / mid-June, and mid-July at higher altitudes.
Larva: Not described. According to Barkemeyer (1994), this species overwinters in the pupal stage.
Distribution: From Finland and Scandinavia, in the south to the Pyrenees; from Ireland, in the east through northern and central Europe (and northern Italy) in the European parts of Russia through Siberia to the Pacific coast (Japan) (Speight, 2001).
Balkan Peninsula: Bosnia and Herzegovina, Montenegro, Serbia, and Greece.
Macedonia: Species are recorded only in a few localities in Macedonia.
Published findings: sub. *S. bucculatus* in Glumac (1968: 870).
Incorrect literature data: sub. *S. bucculatus* in Glumac (1968): Mavrovo, spruce forest, on leaves, 1♂, June 09, 1959, (leg. Glumac) SKO; Mavrovo, arr. stream, on leaves, 1♀, May 30, 1960, (leg. Glumac) IBNS (= *P. punctulatus*).
Material: 3 specimens (1♂, 2♀).
New findings: Mavrovi Anovi, arr. stream, on leaves, 1♀, May 25, 1995, (leg. Krpač), SKO.

Comment: The species has been recorded only in a few localities on the Balkan Peninsula, in deciduous forests, but also in coniferous forests and coniferous plantations. Literature data on specimens of *S. bucculatus*, from the locality Mavrovo in Macedonia, published in Glumac (1968), refer to species *P. punctulatus*, which was registered for the first time in the territory of Macedonia based on redetermination. Analyzed specimens from Glumac's collections (SKO and IBNS) show that *S. bucculatus* cannot be included in the list of hoverflies of Macedonia.

Genus *Pipizella* Rondani, 1856

The genus includes many related species that can be morphologically separated only by analyzing the structure of male genital armatures. 23 species are known in Europe (Verlinden, 1999a). Many species have a narrow range. Most species are distributed in the Alps and parts of high mountains in Europe. Six species have been identified in Macedonia. 4 species have been confirmed on Sharr Mountains. Eleven specimens of species of the genus (11♀) remain undetermined because identification is currently impossible and are kept in the SKO collection as *Pipizella* sp. The larvae of this genus feed on aphids.

99. *Pipizella annulata* (Macquart, 1829)

sub. *Heringia virens* (Fabricius, 1805) in Glumac, 1968 (in part)

Habitat type: Deciduous forests; mesophilic and moist forests of *Fagus* and *Castanea*; on alpine pastures up to 2000 m above sea level; can be found on pastures at lower altitudes.

Adult: Adults live in dense vegetation along paths at the edge of forest clearings and along fences; they fly low in shady places and in the dense vegetation of thorn bushes; resting on low-growing plants; between high vegetation along streams and alpine pastures.

Host plant: Umbelliferae; *Chaerophyllum*, *Galium* i *Heracleum sphondylium.*

Flight period: End of May / September, most massive in June / July; and only at higher altitudes and northern latitudes in July / August.

Larva: Not described, but Dussaix (1997) found larvae at the root of *Heracleum*, among aphids guarded by ants (Speight, 2001).

Distribution: From Finland, in the south to southern Portugal, and in the east through Central Europe to Hungary; around the Mediterranean to the former Yugoslavia and Turkey (Speight, 2001).

Balkan Peninsula: Montenegro, Serbia, and Greece.

Macedonia: This species is poorly researched.

Published findings: (Krpač, 2006).

Material: 1 specimen (1♂).

Incorrect literature data: sub. *H. virens* in Glumac (1968: 869) (in part): Azajnica, next to the river Radika, on *Heracleum sphondylium*, 1♂, June10, 1959, (leg. Glumac) (SKO).

Comment: This mountain species has been so far recorded on several mountains of Balkan Peninsulas, at altitudes of 500-2000m. Males and females of *P. annulata* have long hairs on the posterior tibiae, but not as long as in *P. virens*. The basal tarsus of the fore and middle legs is light yellow in *P. annulata*, and in *P. virens* and *P. videata* the basal tarsus, is indistinctly to dark brown at the end of fore legs, (Speight, 2001).

100. *Pipizella divicoi* (Goeldlin, 1974)

sub. *Heringia maculipennis* (Meigen, 1822) in Glumac, 1968 (in part)

Habitat type: Open spaces and shrubs; dry shruby pastures: *Prunus spinosa*, *Crataegus* or *Rosa* sp.,

characteristic plants for the habitat of this species. They can be found up to 2300m above sea level on the Alps (Verlinden, 1999a).

Adult: Adults fly fast and close to the surface of earth, in sparse vegetation, in open terrains with shrubs; they visit flowers of low growing plants.

Host plant: *Aegopodium podagraria*, *Euphorbia*, *Mercurialis*, *Thymus*.

Flight period: May / June and July at higher altitudes.

Larva: not described (Speight, 2001).

Distribution: from the Netherlands, in the south to the Mediterranean coast of Spain; from Belgium and northern France (Rhine Valley), in the east through Central and Southern Europe (Italy, former Yugoslavia) to Turkey and European parts of Russia, through Siberia to the Pacific coast and Mongolia. This species is slowly disappearing with the introduction of irrigation systems into dry pasture habitats (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Species registered in several localities.

Published findings: (Vujić, 1997: 52-53).

Material: 4 specimens (2♂2♀), SKO.

Verified literature data: (Vujić, 1997).

New findings: Mavrovi Anovi, the valley of a mountain stream, on flowers, 1♂, May 30, 1960, (leg. Glumac); valley of the river Radika, on leaves, 1♂, May 31, 1960, (leg. Glumac). Mavrovi Anovi, 2♂, May 24, 1995, (leg. Krpač), (SKO).

Comment: *P. divicoi* has been registered on several mountains in Balkan Peninsulas, on dry meadows in different types of forest communities. In Macedonia, this species is registered in several localities. Males can differ from males of other species of the genus *Pipizella* in that their third abdominal sternite which is very thin (in other species it is 3x wider than its central length) (Speight, 2001).

101. *Pipizella maculipennis* (Meigen, 1822)

Heringia maculipennis Meigen, 1822 in Glumac, 1968 (in part)

Habitat type: Forests and open spaces; dry grassy terrains, in the forest of *Fagus* and *Pinus*.

Adult: No data.

Host plant: *Cirsium*, *Euphorbia* sp., *Anthriscus sylvestris*, *Lapsona* sp. and *Chrysanthemum* sp.

Flight period: End of May / August.

Larva: Not described (Speight, 2001).

Distribution: The distribution of the species is uncertain due to its possible replacement with the species *Pipizella zennegenensis*; known in Britain (southern England), Belgium, France, Switzerland, Italy, Bosnia, Croatia, Macedonia, Montenegro, Serbia, Romania, and Turkey (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Common species.

Published findings: as *H. maculipennis* in Glumac (1968: 869).

Material: 3 specimens (1♂, 2♀).

Verified literature data: as *H. maculipennis* in Glumac (1968) (in part): Tetovo, Staro Selo, 1♂, May 28, 1960, (leg. Glumac); Mavrovi Anovi, valley of a mountain stream, on flowers, 1♀, May 30, 1960, (leg. Glumac); valley of the river Radika, on leaves, 1♀, May 31, 1960, (leg. Glumac), SKO.

Comment: This is mostly widespread species of this genus *Pipizella* in the Balkan Peninsula. It is

common species in Macedonia. Males of *P. maculipennis* differ with highly convex third abdominal sternite from males of other species of the genus *Pipizella* (Speight, 2001).

102. *Pipizella viduata* (Linnaeus, 1758)
sub. *Heringia virens* (Fabricius, 1805) in Glumac, 1968 (in part)

sub. *Heringia maculipennis* (Meigen, 1822) in Glumac, 1968:869 (in part)

Habitat type: Forests and open spaces; dune pastures, manures, pastures, grasslands in forests, especially in shrubs forests; in southern Europe and in alluvial old forests.

Adult: Adults fly between low-growing plants, rarely at altitudes above 1m, next to forest trails with *Rubus fruticosus* shrubs.

Host plant: Umbelliferae; *Euphorbia*, *Galium*, *Potentilla erecta*, *Daucus carota*. An extended list of flowers that this species visit is given by de Buck (1990).

Flight period: Mid-April / early October and most massive in May, June, and mid-July.

Larva: Larva was described by Dixon (1960), under the name *Pipizella varipes*; it feeds on aphids grown by ants in the roots of low-growing plants (Umbelliferae). (Speight, 2001).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean; from Ireland, in the east through most of Europe in the European parts of Russia and western Siberia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Registered at several locations.

Published findings: (Vujić, 1997: 54-55).

Material: 17 specimens (15♂, 2♀).

Misidentification: sub. *H. virens* in Glumac (1968: 869): Tetovo, Staro Selo, wet meadow, 1♂, June 07, 1959, (leg. Glumac); Mavrovi Anovi, forest meadow, on *Daucus carota* flower, 1♂, August 01-03, 1961., (leg. Glumac) (= *P. vidiata*) SKO; sub. *H. maculipennis* in Glumac (1968: 869) (in part): Vata Bogunović, 1♂, June 07, 1959., (leg. Glumac) (= *P. videata*), SKO.

Verified literature data: (Vujić, 1997): Sharr Mountains, Popova Šapka-Lešnica, DM-96, 1700m, 1♂, 27.07.1986; IBNS.

New findings: Vata Bogunović, 1♂, June 7, 1959, (leg. Glumac); Tetovo, village of Vratnica, 1♂, July 21, 1971, (leg. Čingovski); Mavrovi Anovi, 2♂, 1♀, May 24, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, 1♀, May 25, 1995, (leg. Krpač); Mavrovi Anovi, 1♂, July 10, 1998, (leg. Krpač); Mavrovi Anovi, meadow, on *Euphorbia* sp. and *Ranunculus* sp., 1♂, May 17, 2003, (leg. Krpač); Mavrovo, s. Nichpur, 1♂, June 11, 2004., (leg. Krpač), SKO.

Comment: This is mostly numerous genus' species in Europe, occurring in all habitat types. In Macedonia, it is a common and numerous species, found in several localities and different habitat types. Lucas (1977), by revising several collections, indicated that earlier data on the species must be considered carefully, due to confusion of *P. videata* with related species. Verlinden (1991, 1999a) confirms this fact by comparing *P. videata* with other species of the genus *Pipizella*. Females of this species cannot be reliably separated from females of other European species of this genus. *P. videata* referring to in recent literature as *P. varipes*, (Speight, 2001). The morphological characteristics and genitals of males are variable, which indicates that it may be a complex of species. There are also differences in individual characters between mountain and lowland populations.

Genus *Platycheirus* Le Peletier et Serville, 1828

The genus *Platycheirus* is very rich in species. Peck (1988) registers 36 species on the European continent. The list of species is probably not complete yet. The largest number of species is found in

the northern part of Europe, especially in the tundra zone and coniferous communities of boreal type forests. After 1998, 15 more species were added to the European list. First, Goeldlin et al (1990) added three species, then Vokeroth (1990) added two more. By revising the group of *P. scutatus*, Doczkal et al (2002) single out three more species. This number of taxa in northern European fauna of the genus *Platycheirus* are added species with new status (eg *P. nigrofemoratus*) from other areas of Europe, as well as the newly described species *P. urakawensis*. Nilesen (2004) adds seven more species to European fauna with the latest revision of *P. ambiguus* species (*P. altomontis, P. brunnifrons, P. caesius, P. clausseni, P. goeldlini, P. meridimontanus, P. subambiguus)*. Vockeroth and Thompson (1987) suggest that previously isolated species from this genus in the genus *Pyrophaena* should be returned to the genus *Platycheirus*, as noted here. The most understandable key to the determination of European species of the genus *Platycheirus* is given by van Veen (2004). This key has been accepted in Nielsen's (2004) publications where the justification for isolating new species of the *P. ambiguus* group is seen. Eleven taxa have been recorded in Macedonia, two of which: *P. brunnifrons* Nielsen, 2004 and *P. meridimontanus* Nielsen, 2004, were registered for the first time in science. Five species: *P. fulviventris* (Macquart, 1829); *P. immaculatus* (Ohara, 1980); *P. manicatus* (Meigen, 1822); *P. peltatus* (Meigen, 1822) and *P. tarsalis* (Schummel, 1836) are listed for the first time for the territory of Macedonia. 7 species have been registered on Sharr Mountains. Larvae of this genus feed on aphids (Speight, 2004).

103. *Platycheirus albimanus* (Fabricius, 1781)

sub. *Platycheirus podagratus* (Zetterstedt, 1838) in Glumac, 1968

Habitat type: Deciduous forests; but is an extremely anthropophilic species found on farms, suburban gardens, and parks; it can also be found in cleared areas that prevent the spread of forest fires; in coniferous plantations. In southern Europe, this species is widespread in forests and wetlands.

Adult: Adults can be found on forest clearings and along forest paths, in gardens and fences. They fly between bushes and shrubs and above low-growing vegetation on forest clearings; males hover under trees at a height of 1-3m.

Host plant: A wide range of yellow and white flowers: a list of flowers can be found in de Buck (1990).

Flight period: April / October (March / November in southern Europe).

Larva: Described by Dixon (1960); the larvae feed on aphids on various low-growing plants and shrubs. They were found on the trees of *Abies* and *Malus*; Maibach (1993) found larvae along the core of the *Phragmites* tree (Speight, 2004).

Distribution: Greenland, Iceland, Faroe Islands (Jensen, 2001) and from Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean; from Ireland, in the east through most of Europe in Turkey and in European parts of Russia; in Siberia from the Urals to the Pacific coast (Kuril Islands); Philippines; in North America from Alaska, south to Canada, and the western United States (Speight, 2004).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: In Macedonia according to Glumac (1968) states as a rare species.

Published findings: (Glumac, 1968: 868); (Krpač et al, 2001: 183).

Material: 13 specimens (7♂, 6♀).

Misidentification: sub. *P. podagratus* in Glumac (1968: 868): Sharr Mountains, stream valley, on *Roripa* sp., 1♂, 2♀, May 28, 1960; Mavrovi Anovi, mixed forest, on *Euphorbia* sp., 3♂, 2♀, May 30, 1960, SKO (= *P. albimanus*).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 1♂, 1♀, May 23, 1995, (leg. Krpač) SKO.

New findings: Mavrovi Anovi, valley of a mountain stream, on flowers, 2♀, May 30, 1960, (leg Glumac); Sharr Mountains, Tri Vodi, 2♂, August 30, 1990, (leg. Krpač); r. Radika, Lukovo Pole, 1♀, September 06, 1994., (leg. Krpač), SKO.

Comment: Widespread species on the Balkan Peninsula. It was considered a rare species in Macedonia, but our research has shown that it is widespread, registered in numerous localities. Revision of the material showed that the published specimens of *P. podagratus* in Glumac (1968: 868) refer to *P. albimanus*.

104. *Platycheirus ambiguus* (Fallen, 1817)

sub. *Platycheirus sticticus* (Meigen, 1822) in Glumac, 1968 (in part)

Habitat type: Deciduous forests; forest shrubbery clearings, close to forest paths framed by shrubbery, next to fences and in gardens.

Adult: Adults fly only in immediate bush vicinity; males hover next to *Crataegus*, *Prunus spinosa*, or *Salix* in bloom, often among branches; females visit flowers of these trees.

Host plant: *Crataegus*, *Prunus spinosa*, *Pyrus communis*, muški cvetovi *Salix* (*S. repens*), *Viburnum*.

Flight period: The beginning of April / end of May.

Larva: Described by Dusek and Laska (1959) and Goeldlin (1974) as aphidophagus on the bush *Malus*, *Prunus* and *Ribes*; larvae can also be found on *Prunus spinosa* (Pollard et al, 1974).

Distribution: Uncertain due to confusion with other species, but assumed to extend from Finland and Scandinavia, in the south to central Spain; from Ireland, east across much of Europe in Russia to the Pacific coast and Japan (Speight, 2004).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Serbia, Macedonia, and Bulgaria.

Macedonia: Rare species.

Published findings: Vujić, 1995: 48.

Misidentification: sub. *P. sticticus* in Glumac (1968: 868) (in part):

Material: 13 specimens (5♂, 8♀).

Verified literature data: (Vujić, 1995): Mavrovi Anovi, 3♂, 6♀, June 09, 1959. (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, June 30, 1960., (leg. Glumac), IBNS.

New findings: Mavrovi Anovi, 1♂, 1♀, May 30, 1960, (leg. Glumac) (= *P. ambiguus*).

Comment: In Macedonia, this species is extremely rare but also insufficiently researched, registered in only one locality, Mavrovi Anovi. *P. ambiguus* is species very close to *P. sticticus*, with which it is often replaced. Its range in Europe is uncertain due to mixing with other species (Speight, 2004).

105. *Platycheirus immaculatus* (Ohara, 1980)

sub. *Melanostoma transfugum* (Zetterstedt, 1838) in Glumac, 1968 (in part)

sub *Platycheirus sticticus* (Meigen, 1822) in Glumac, 1968 (in part)

Habitat type: Forests; wet forests of *Fagus* / *Picea* and up in the *Abies* / *Picea* zone.

Adult: Adults fly in the canopy of trees, visiting low-rise trees in bloom.

Host plant: *Salix* sp., *Sorbus aucuparia*.

Flight period: End of April / end of June.

Larva: The larva is not described (Speight, 2001).

Distribution: from Norway in the south to central France (Massif Central) and east through central Germany to the Alps (Switzerland, Italy), the Balkans (Greece, parts of the former Yugoslavia) and

Turkey; Pacific coast of Russia and Japan (Speight, 2004).

Balkan Peninsula: Montenegro and Macedonia.

Macedonia: The species was known only in Sušica canyon in Montenegro and in several localities in Macedonia.

Material: 15 specimens (6♂9♀).

Published findings: sub. *P. transfugum* in Glumac (1968: 868) (in part): Mavrovi Anovi, šuma, na cvetu, 3♀, June 09, 1959, (leg. Glumac); Mavrovi Anovi, mixed forest, on *Euphorbia* sp., 5♂, 6♀, May 30, 1960, (leg. Glumac) IBNS (= *Platycheirus immaculatus*). sub. *P. sticticus* in Glumac (1968: 868) (in part): Mavrovi Anovi, mixed forest, "floating" among the trees, 1♂, 30.05.1960, (leg. Glumac) IBNS (= *Platycheirus immaculatus*).

Comment: Doczkal (1996a) draws attention to European species with which *P. immaculatus* may be mixed, with an indication that male specimens may be replaced by *P. ambiguus* and females by *P. sticticus*. Females can also be mixed with females of darker colored variations of other species of the genus *Platycheirus*. According to revision of Nielsen (2004), this species was placed in the key of van Veen (2004) to determine European species of the genus *Platycheirus*. The species has not been recorded for southern and central Europe. The only data is the finding in the Sušica canyon in Montenegro. Probably it represents an indicator of relictness of its range, because this was the only known specimen recorded far from the basic range of the species in northern Palearctic (Brajović, 2004).

106. *Platycheirus manicatus* (Meigen, 1822)

Habitat type: Wetlands and open spaces; marshes, wet pastures, mountain, and alpine pastures, along streams and rivers, in open terrains and in the taiga.

Adult: Adults live near springs, water fields, on pastures and meadows; they fly low between the stems of the ground vegetation.

Host plant: White Umbelliferae; *Allium schoenoprasum*, *Caltha*, *Campanula rapunculoides*, *Cardamine*, *Chrysanthemum*, *Cirsium*, *Filipendula*, *Glechoma hederacea*, *Leontodon*, *Origanum*, *Ranunculus*, *Rosa rugosa*, *Senecio*, *Stellaria*, *Succisa*, *Taraxacum*, *Veronica*.

Flight period: May / September, most massive in June and August.

Larva: The larva was described by Goeldlin (1974) as an aphidophagous on low-growing plants and shrubs.

Distribution: From Iceland, Faroe Islands (Jensen, 2001), Finland and Scandinavia, in the south to the Iberian Peninsula, the Mediterranean and North Africa; from Ireland, in the east through most of Europe, in Turkey and European parts of Russia; in Siberia from the Urals to the Altai; Alaska in North America; Greenland (Speight, 2004).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, and Bulgaria.

Macedonia: The species is registered only in two localities in Macedonia.

Material: 3 specimens (3♂).

New findings: Mavrovi Anovi, 1♂, June 15, 1972, (leg. Čingovski); Pelister, 2♂, July 19, 1990, (leg. Krpač). SKO.

Comment: The species in Macedonia is registered only in two localities in coniferous forest communities.

107. *Platycheirus meridimontanus* Nielsen, 2004
sub. *Melanostoma transfugum* (Zetterstedt, 1838) in Glumac, 1968 (in part)

Habitat type: Not sufficiently known; mountain zone.

Adult: No data.

Host plant: No data.

Flight period: late May / mid-June.

Larva: Not described.

Distribution: Macedonia; Lebanon.

Balkan Peninsula: Macedonia.

Macedonia: Only two sites have been recorded in Macedonia (Oteševo and Mavrovi Anovi) (Nielsen, 2004).

Published findings: (Nielsen, 2004: 20).

Material: 6 specimens (6♂).

Incorrect literature data: Sub. *M. transfugum* in Glumac (1968: 869) (in part): Oteševo, 2♂, June 13, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, May 30, 1960, (Leg. Glumac) (IBNS).

Verified literature data: (Nielsen, 2004): Holotype: Oteševo, 1♂, June 13, 1959, (leg. Glumac); Paratip: Oteševo, 1♂, June 13, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, May 30, 1960, (leg. Glumac).

Comment: The species is described based on our type of material (Nielsen, 2004); there is no data on its biology. Specimen of the holotype from Oteševo is cited as *M. transfugum* in Glumac (1968) (in part); while one specimen from the same locality and one from locality Mavrovi Anovi is marked as paratyphoids. These are the only findings of their species so far. Nielsen (2004) by revising the material makes a key in which this species is separated from other species of the group *P. ambiguus*. The female of the species remains unknown for now.

108. *Platycheirus peltatus* (Meigen, 1822)

Habitat type: Wetlands; marshes, wet pastures, along streams and rivers, pastures, garbage dumps with high vegetation; open terrain in the Alps and humid forests of *Fagus* and *Abies*.

Adult: Adults reside among plants of dense coastal wetland vegetation; males hover at a height of up to 1m in places with sparse vegetation; resting on leaves.

Host plant: White Umbelliferae, *Allium ursinum*, *Berteroa incana*, *Epilobium*, *Eupatorium*, *Euphorbia*, *Galium*, *Papaver*, *Ranunculus*.

Flight period: May / August, most massive in June / July with random specimens in September.

Larva: Not described (Speight, 2004).

Distribution: Uncertain due to confusion with other species, but registered presence in Iceland, Norway, Sweden, Finland, Denmark, Ireland, Britain, Germany, the Netherlands, the Ardennes and the Vosges, fields along the Loire, Rhine Valley, Pyrenees, and Alps (Switzerland, Liechtenstein, Austria), in the former Yugoslavia and Japan. According to Vockeroth (1990), reports of the species' presence in North America are erroneous (Speight, 2004).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, and Macedonia.

Macedonia: This is a rare species in Macedonia.

Published findings: (Krpač. 2006).

Material: 3 specimens (1♂, 2♀).

New findings: Sharr Mountains, 1♀, July 23, 1939, (leg. A. Fadejev); Mavrovi Anovi, 1♂, 1♀, July 06, 1995. (leg. Krpač), SKO.

Comment: It is rare species in Macedonia. With the Revision of the material of Glumac's collection, we established that the specimens of *P. peltatus,* published in Glumac (1968: 868), refer to the *P. scutatus*, which is close to species *P. peltatus*. Our research has shown that the taxa *P. peltatus* is still present in Macedonia.

109. *Platycheirus scutatus* (Meigen, 1822)

sub. *Platycheirus peltatus* (Meigen, 1822) in Glumac, 1968

Habitat type: Forests; several types of deciduous forests, especially shrubs; an anthropophilous species found along hedges, in orchards and olive groves, in suburban gardens, parks and young coniferous plantations.

Adult: Adults reside in clearings, next to forest paths and hedges; fly in the woods up to 3m above the ground; males hover at height of 1-3m, along hedges, on forest glades, etc.

Host plant: White Umbelliferae; *Achillea millefolium*, *Aster*, *Berberis*, *Campanula rapunculoides*, *Euphorbia*, *Geranium robertianum*, *Leontodon*, *Ranunculus*, *Rosa*, *Salix repens*, *Silene dioica*, *Stellaria*, *Taraxacum*, *Tripleurospermum inodorum*.

Flying period: April / October, more massive in June and August and with random specimens in November.

Larva: Described by Bhatia (1939); larva biology was described by Dusek and Laska (1974); it feeds on aphids on low-growing plants, shrubs, bushes, and low trees.

Distribution: From Iceland, Faroe Islands (Jensen, 2001), Finland and Scandinavia, in the south to the Iberian Peninsula and the Mediterranean; from Ireland, in the east through northern, central, and southern Europe (Italy, former Yugoslavia, Greece) in Turkey and European parts of Russia; Afghanistan; across Siberia to the Pacific coast (Sakhalin, Japan); in North America from Alaska to Colorado (Speight, 2004).

Balkan Peninsula: Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: The species was found at several sites.

Published findings: (Krpač et al, 2001: 183).

Material: 4 specimens (3♂, 1♀).

Incorrect literature data: sub. *P. peltatus* in Glumac (1968): Valley of the river Radika, shrubs, on leaves, 3♂, 31.05.1960, (leg. Glumac) (= *P. scutatus*), SKO.

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, mixed forest, on *Euphorbia* sp., 1♀, 30.05.1960, (leg. Glumac), SKO.

Comment: *P. scutatus* is species registered in almost the entire Balkan Peninsula except Slovenia, Bosnia and Herzegovina, and Albania. In Macedonia, the species was found at several sites. Recently described species *P. splendidus* Rotheray is very similar to *P. scutatus*, especially females, and therefore determination should be performed very carefully (Speight, 2001).

Genus *Scaeva* Fabricius, 1805

According to the key of Dusek and Laska (1985), which was made after the revision of genus, 5 species can be distinguished with certainty in Europe, four of which are widespread. Three species have been registered in Macedonia and in Sharr Mountains: *Scaeva dignota* (Rondani, 1857), *S. pyrastri* (Linnaeus, 1758) and *S. selenitica* (Meigen, 1822). Larvae of the genus *Scaeva* feed on aphids.

110. *Scaeva dignota* (Rondani, 1857)

Habitat type: *Pinus* forests, up to a height of the *Pinus uncinata* forest in the Pyrenees, thermophilic *Quercus* forests (evergreen oak and macchia forests, *Q. ilex* and *Q. suber*) and mesophilic *Fagus* forests; in suburban gardens.

Adult: Adults fly fast at an altitude of 1-3m, along forest trails and on forest clearings; males hover at 5m altitude, next to forest paths in the sun; they rest in the early evening on low-growing plants.

Host plant: White Umbelliferae and yellow Compositae; *Prunus padus*.

Flight period: From May to July and early August / September in southern Europe.

Larva: Not described (Speight, 2001).

Distribution: Denmark, France (from Brittany in the south) and the Czech Republic, in the south to the Mediterranean (and Crete); from Portugal and Spain, in the east through central (Germany, Switzerland, Austria) and southern Europe to the former Yugoslavia, Greece, Turkey and North Africa (Speight, 2001).

Balkan Peninsula: Croatia, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: (Glumac, 1968).

Material: 8 specimens (3♂, 5♀).

Verified literature: Mavrovi Anovi, 1♀, July 20, 1970, (leg Čingovski); Mavrovi Anovi, 2♂, 4♀, July 09, 1991, (leg. T. Ivanovski); Mavrovi Anovi, 1♂, October 16, 1991, (leg. Krpač), SKO.

Comment: Some specimens of this species were identified as *S. selenitica* (Glumac, 1968), among other things, because they occur together, in the same localities, and both are forest species.

111. *Scaeva selenitica* (Meigen, 1822)

Habitat type: Several types of deciduous forests; shrubs; orchards and evergreen forest of *Quercus ilex* in southern Europe.

Adult: Adults reside on forest clearings and trails; fly fast up to 3m above the ground; at dusk, they rest on the leaves of bushes and shrubs; males hover on forest clearings.

Host plant: White Umbelliferae; *Buxus*, *Erica*, *Hamamelis*, *Leontodon*, *Ligustrum*, *Origanum*, *Polygonum*, *Ranunculus*, *Salix*, *Sarrothamnus*, *Taraxacum*, *Tussilago*, *Viburnum opulus* and *Eryngium campestre*.

Flight period: March / September in most of Europe, June / September in mountainous regions with cold climates. In Central Europe, adults are seen feeding on flowers in February as well (Schedl, 1992).

Larva: Described by Dixon (1960), Speight et al (1986); larva is aphidophagous on shrubs and trees; Kula (1982) observed that larva overwinters on the ground under fallen *Picea* spruce leaves (Speight, 2001).

Distribution: From Finland and Scandinavia and the Faroe Islands (Jensen, 2001), in the south to the Iberian Peninsula and the Mediterranean; North Africa; from Ireland, in the east through most of Europe to Turkey and the European part of Russia; from the Urals through Siberia to Cis Baikal, Sakhalin, and the Kuril Islands (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: A rare species.

Published findings: (Radenković et al, 1995: 54); (Krpač et al, 2001: 182).

Material: 1 specimen (1♂).

New findings: Mavrovi Anovi, 1♂, June 26, 1991, (leg. Krpač), SKO.

Comment: This is widespread species on Balkan Peninsula. We found it in forest and meadow ecosystems. It is common species in Macedonia and due to its similarity to species *S. dignota* and *S. pyrastri*, it is often confused with them. Part of the specimens of *L. seleniticus* from museum collection SKO, published in Glumac (1968: 874), refers to the species *S. dignota*, and part of specimens of the same species to *S. pyrastri*. Due to great morphological similarity with species *S. dignota* until so far, in southern Europe and Asia, *S. selenitica* was not treated as a separate species (Speight, 2001).

112. *Scaeva pyrastri* (Linnaeus, 1758)

Lasiopticus pyrastri Linnaeus, 1758 in Glumac, 1968

L. pyrastri f. *typica* in Glumac, 1968

Habitat type: wide range of habitats; anthropophilic to some extent, it is found in fields, hedges, orchards, gardens, and coniferous plantations.

Adult: Adults live on forest clearings and paths, next to hedges and in gardens; fly fast at altitudes up to 3m; they fly in large numbers around bushes and shrubs.

Host plant: Umbelliferae; *Calluna*; *Campanula rapunculoides*, *Cirsium*, *Convolvulus*, *Eschscholzia californica*, *Euphorbia*, *Hamamelis*, *Leontodon*, *Ligustrum*, *Lycium chinense*, *Parnassia*, *Pulicaria disenterica*, *Rubus fruticosus*, *R. idaeus*, *Senecio*, *Solidago virgaurea*, *Tripleurospermum inodorum*, *Ulmus*, *Eryngium campestre*, *Orlaya grandiflora*, *Ranunculus* sp., *Lepidium* sp., *Anthriscus sylvestris*, *Verbascum* sp, *Menta* sp, *Pastinaca sativa*, *Crategus monogyna*, *Malva sylvestris*, *Synopis* sp., *Alyssum* sp., *Cnautia* sp., and *Daucus* sp (extended list by de Buck, 1990).

Flight period: February / November in most of continental Europe.

Larva: Larva has been described by many authors, e.g., Bhatia (1939); they feed on aphids, low-growing plants, shrubs, and bushes, including numerous crops. Berkemeyer (1994) describes the biology of species.

Distribution: From Finland and Scandinavia to the Iberian Peninsula, the Mediterranean, the Canary Islands and North Africa; from Ireland, in the east through most of Europe and Asia Minor to the European part of Russia, and through Siberia from the Urals to the Pacific coast (Kuril Islands); India, China; in North America from Alaska to California and New Mexico. This is an extremely migratory species (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Known as a common and numerous species.

Published findings: as *L. pyrastri* in Glumac (1968: 873); (Krpač et al, 2001: 181-182).

Material: 28 specimens (9♂, 19♀).

Verified literature data: as *L. pyrastri* f. *typica* in Glumac (1968): Tetovo, Vata Bogunović, meadow, on flowers *Ranunculus* sp., 1♀, June June 07, 1959, (leg. Glumac); Tetovo, s. Vlažna livada, 1♂, 2♀, June 08, 1959, (leg. Glumac); Mavrovi Anovi, next to the lake, on *Lepidium* sp. and *Ranunculus* sp., 1♂, June 09, 1959, (leg. Glumac); Gostivar, Vrutok, next to the road, on leaves and *Verbascum* sp, 2♀,

August 29, 1959, (leg. Glumac); Tetovo, wet meadow, on *Euphorbia* sp., 1♀, May 28, 1960, (leg. Glumac); Mavrovi Anovi, mixed forest, on *Euphorbia* sp., 1♂, 1♀, May 30, 1960, (leg. Glumac); Mavrovi Anovi, the valley of a mountain stream, on flowers., 1♂, 1♀, May 30, 1960, (leg. Glumac); Mavrovi Anovi, stream valley, on the flower of *Pastinaca* sp., *Malva* sp., *Daucus* sp. and *Mentha* sp., 5♀, August 01-03, 1961, (leg. Glumac); Mavrovo, the valley of the stream, shrubs, 1♂, August 27, 1966., (leg. Glumac), SKO. As *L. pyrastri* f. *typica* in Glumac (1968): Mavrovi Anovi, spruce forest, 1♀, August 30, 1959, (leg. Glumac); Mavrovi Anovi, shrubs, 1♀, Ausgut 27, 1966, (leg. Glumac), IBNS. (Krpač et al, 2001): Mavrovi Anovi, 1♀, August 12, 1990, (leg. Krpač); Mavrovi Anovi, 1♀, June 17, 1994, (leg. Krpač); Mavrovi Anovi, 2♂, July 06, 1995, (leg. Krpač); Mavrovi Anovi, 1♀, October 10, 1997, (leg. Krpač); Mavrovi Anovi, 1♂, July 15, 1998, (leg. Krpač), SKO.

New findings: Sharr Mountains, Tri Vodi, 1♂, 1♀, August 30, 1990, (leg. Krpač), SKO.

Comment: This is migratory species of the genus *Scaeva* with widest distribution. It is found throughout the Balkan Peninsula in all habitat types. In Macedonia, it is known as common and numerous species, registered in numerous localities and different habitat types.

Genus *Sphaerophoria* Le Peletier et Serville, 1828

This genus includes more than 20 species in Europe. Speight (1988b) provides key to species determination based on differences in the structure of male genital armatures. Claussen (1984) and Goeldlin (1989, 1991) add six more species of European fauna. The status of one species of *Sphaerophoria pictipes*, Boheman described from Sweden is uncertain. Most species of this genus can be determined only on basis of structure of male genitalia. Most acceptable key for the determination of males of European species *Sphaerophoria* is given by van Veen (2004). Two species have been identified in Macedonia: *S. rueppelli* Wiedemann, 1830 and S. scripta (Linnaeus, 1758). Only 1 species is known for Sharr Mountains. The larvae feed on aphids.

113. *Sphaerophoria scripta* (Linnaeus, 1758)

Sphaerophoria scripta var. *dispar* (Loew, 1840) in Glumac, 1968

Sphaerophoria scripta var. *nigricoxa* (Zetterstedt, 1843) in Glumac, 1968

Sphaerophoria scripta var. *strigata* (Staeg., 1845) in Glumac, 1968

Sphaerophoria scripta f. *typica* in Glumac, 1968

sub. *Sphaerophoria menthastri* L. var. *philanthus* Meigen in Glumac, 1968

sub. *Sphaerophoria menthastri* var. *picta* in Glumac, 1968

Habitat type: Open spaces; pastures in Alpine zone, grassy areas in dry forests, suburban gardens, salt marshes in northern coastal boundaries of the range of species; in the south of anthropophilous range, it is found on various harvest crops, next to fences, along the edges of roads.

Adult: Adults fly low through the grass; they rest on vegetation, on grass stalks.

Host plant: White Umbelliferae; *Achillea*; *Campanula rapunculoides*, *Cirsium arvensis*, *Crataegus*, *Erigeron*, *Eschscholzia californica*, *Euphorbia*, *Leontodon*, *Origanum vulgare*, *Prunus spinosa*, *Ranunculus*, *Tripleurospermum inodoratum*, *Tusilago*, (extended list by de Buck (1990).

Flight period: April to early November (May / September at higher latitudes and higher altitudes and probably throughout the year in southern Europe).

Larva: Described by Goeldlin (1974) as an aphidophagous, on plants and harvest crops: *Avena*,

Brassica, *Cichorium*, *Lactuca*, *Triticum*, *Vicia*. Barkemeyer (1994) describes the biology of the species.

Distribution: Highly migratory species; northwestern Greenland, Iceland, and from Finland and Scandinavia in the south to the Mediterranean, the Canary Islands, and North Africa; from Ireland, east across much of the Palearctic to the Pacific coast of Asia, Kashmir, and Nepal (Speight, 2001).

Balkan Peninsula: It is found in all countries of the Balkan Peninsula.

Macedonia: It is known in Macedonia as a common, numerous, and widespread species.

Published findings: as *Sphaerophoria scripta* var. *dispar* in Glumac (1968: 877-878); as *S. scripta* var. *nigricoxa* in Glumac (1968: 878); as *S. scripta* var. *strigata* in Glumac (1968: 878); as *S. scripta* f. *typica* in Glumac (1968: 877); (Šimić, 1982: 89); (Krpač et al, 2001: 182).

Material: 58 specimens (28♂, 30♀).

Incorrect literature data: sub. *S. menthastri* var. *philanthus* in Glumac (1968: 877). Data from the locality: Mavrovi Anovi, (leg. Glumac), has been revised and refers to the species *S. scripta* (IBNS); sub. *S. menthastri* var. *picta* (Glumac, 1968: 877). Data on a specimen from the locality Mavrovi Anovi, (leg. Glumac), have been revised and referred to the species *S. scripta* (IBNS).

Verified literature data: as *S. scripta* var. *dispar* in Glumac (1968: 877-878); Mavrovi Anovi, Azajnica; the valley of the river Radika; Tetovo; Tetovo, Staro Selo; Tetovo, Vata Bogunović, (IBNS). As *S. scripta* var. *nigricoxa* in Glumac (1968): Mavrovi Anovi; Tetovo, Vata Bogunović, (IBNS). As *S. scripta* var. *strigata* in Glumac (1968): Tetovo; (IBNS). As *S. scripta* f. *typica* in Glumac (1968): Mavrovo; the valley of the river Radika; Tetovo, Vata Bogunovic; Tetovo; Gostivar, (IBNS); (Šimić, 1982): Dubrava-Tetovo; Mavrovi Anovi, (IBNS). (Krpač et al, (2001): Mavrovi Anovi, 3♂, July 06, 1988, (leg. Krpač); Mavrovi Anovi, 1♀, July 09, 1991., (leg. T. Ivanovski); r. Radika, Pilana, 3♂, July 04, 1995, (leg. Krpač), Mavrovo, village of Ničpur, 1♂, May 10, 1996, (leg. Krpač), Mavrovo, Pilana, 1♀, 10.05.1996, (leg. Krpač); r. Radika, Lukovo Pole, 1♂, May 10, 1996., (leg. Krpač); Mavrovi Anovi, meadow, on the flower of *Euphorbia* sp. and *Taraxacum* sp., 2♂, 2♀, May 17, 2003; Mavrovi Anovi, on *Plantago lanceolata*, *Petasites hybridus*, *Euphorbia* sp., 2♂, 3♀, Ausgut 11, 2004, (leg. Krpač) SKO.

New findings: Tetovo, 1♀, July 16, 1957, (leg. Bogoevski); Sharr Mountains, Popova Šapka, 1♂, 5♀, July 15-28, 1958, (leg. S. Joksimović); Tetovo, s. Tearce, 3♂, 5♀, July 22, 1958, (leg. S. Joksimović); Mavrovi Anovi, 1♀, June 23, 1968, (leg. Topukova); Mavrovi Anovi, 1♀, June 25, 1970, (leg. Čingovski); Mavrovi Anovi, 1♀, July 26, 1970, (leg. Čingovski); Tetovo, village of Vratnica, 3♂, 3♀, July 21, 1971, (leg. Čingovski); Mavrovi Anovi, 3♂, 1♀, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 3♂, 3♀, July 03, 1975, (leg. Čingovski); Mavrovi Anovi, 3♂, 1♀, July 05, 1975, (leg. Čingovski); Sharr Mountains, Tri Vodi, 1♂, 1♀, August 30, 1990, (leg. Krpač), SKO.

Comment: This is cosmopolitan widespread species, registered in numerous localities and in all habitat types. It occurs throughout season with larger number of generations. This is one of more variable types. Population from different altitudes do not have enough different characters to notice variations and properly separate into separate taxa. Perhaps some future more detailed research would prove greater species variability.

Genus *Sphegina* Meigen, 1822

European species of the genus *Sphegina* were revised by Thompson and Thorpe (1986). Speight (2004) lists 14 species for European territory. Four species have been registered in Macedonia, two of which, *S. clavata* (Scopoli, 1763) and *S. elegans* Schummel, 1843 are new to this area. The presence of 2 peaks was confirmed on Sharr Mountains. Larvae of genus belong to the group of terrestrial saprophages, they develop in peat bogs, feeding on decaying waste materials.

114. *Sphegina clunipes* (Fallen, 1816)

Habitat type: Several types of moist coniferous and deciduous forests.

Adult: Adults fly in forest at a height of up to 2m, are rarely exposed to direct sunlight, can be found in shady places along the edge of forest clearings, along trails and streams; usually near water.

Host plant: White Umbelliferae; *Cardamine pratense*; *Crataegus*, *Euphorbia*, *Geranium pratense*, *G. robertianum*, *Potentilla erecta*, *Prunus spinosa*, *Ranunculus*, *Rubus fruticosus*, *Sanicula*, *Stachys*, *Veronica*, *Anthriscus sylvestris*.

Flight period: May / September most massively in May / June and August.

Larva: Described by Hartley (1961) found under the bark of *Ulmus*; larvae were found under the bark of various deciduous trees (e.g., *Quercus*) (Rotheray, 1990).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through most of Europe to the European part of Russia, the Caucasus; across Siberia to the Pacific coast; Japan (Speight, 2004).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Bulgaria.

Macedonia: A rare species.

Published findings: (Glumac, 1968: 850).

Material: 13 specimens (8♂, 5♀).

Verified literature data: (Glumac, 1968): Fenced, beech forest, on the flower of *Anthriscus sylvestris* and on the leaves, 4♂, 5♀, June 07, 1960; on leaves, 2♂, June 20, 1959, IBNS. Fenced, north side, beech forest, on the flower of *Anthriscus sylvestris* and on the leaves, 1♂, June 07, 1960, (leg. Glumac) SKO.

New findings: Mavrovo, the valley of a mountain stream, on flowers, 1♂, May 30, 1960, (leg. Glumac).

Comment: *S. clunipes* is the most common and most numerous species of this genus in Europe, but it is rare in Macedonia. It is registered in mountains, at higher altitudes.

115. *Sphegina sublatifrons* Vujic, 1990

Habitat type: Forests and freshwater; it can be found next to the stream in the *Picea* / *Abies* forest at altitude above 1200m (Vujić, 1990).

Adult: Adults fly low in coastal vegetation, resting on *Caltha* stalks and on broadleaf shrubs near springs and streams (Vujić, oral statement).

Host plant: *Caltha* sp., *Ranunculus* sp., (Vujić, oral presentation).

Flight period: May / June.

Larva: Not described (Speight, 2001).

Distribution: Serbia (Vujić, 1990).

Balkan Peninsula: Slovenia, Serbia, and Macedonia (Speight, 2004).

Macedonia: In Macedonia, it is registered in only one locality, Mavrovi Anovi.

Published findings: (Krpač et al, 2001: 173).

Material: 4 specimens (1♂).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 1♂, June 06, 1996, (leg. Krpač), (SKO).

Comment: *S. sublatifrons* is an endemic species (Fig. 2). Until now, it was known only in Serbia (Kopaonik, Star Mountain, Sharr Mountains). It is rare in Macedonia, registered in the localities of Mavrovi Anovi and Jablanica, in *Abies* forest, at an altitude of 1500m. Speight, (2001) lists the species for Slovenia as well, but the expansion of the range still limits species to the area of Balkan Peninsula. Vujić (1990) described detailed differences between males and females of *S. latifrons* and *S. sublatifrons* and drew the genitals of males of both species, thus facilitating determination.

Fig. 2. *Sphegina sublatifrons* Vujić, 1990

Genus *Syritta* Le Peletier et Serville, 1828

This genus *Syritta* in Europe comprises only two species, which can be easily separated according to Séguy key (1961). Both species were registered in Macedonia: *S. flaviventris* Macquart, 1842 and *S. pipiens* (Linnaeus, 1758). One species is known to Sharr Mountains. Larvae of this genus are coprophagous. They grow in cow manure or rotting plants and fruits, decaying vegetables and garden compost.

116. *Syritta pipiens* (Linnaeus, 1758)

Habitat type: Wetlands; along edges of swamps and fresh waters, lakes, ponds, channels, ditches, springs, and rivers; urban areas, farms, suburban gardens, and parks.

Adult: Adults fly low, rarely above 1m; resting on vegetation; males patrol next to stems of low-growing flowering plants (Parmenter, 1956).

Host plant: White Umbelliferae; *Achilea*, *Allium*, *Aster*, *Calluna*, *Cardamine*, *Cirsium palustre*, *Convolvulus*, *Crataegus*, *Epilobium*, *Euphorbia*, *Galium*, *Jasione montana*, *Leontodon*, *Polygonum cuspidatum*, *Potentilla erecta*, *Prunus laurocerasus*, *Ranunculus*, *Rosa canina*, *Senecia jacobaea*, *Sorbus aucuparia*, *Tussilago*, (extended list of plants by de Buck (1990)).

Flight period: March / November, in southern Europe most likely throughout the year, but in a larger number of reports from May to October.

Larva: It was described by Heiss (1938) and Hartley (1961), found in decaying vegetables, cow manure, and garden compost (Speight, 2001).

Distribution: Becomes cosmopolitan. It is known in much of the Palearctic; North Africa, most of North America, South America, and the Oriental region. Reports from the Afrotropic region are probably erroneous (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Numerous and widespread species.

Published findings: (Glumac, 1968: 859); (Krpač et al, 2001: 183).

Material: 19 specimens (9♂, 10♀).

Verified literature data: (Glumac, 1968): Tetovo, Staro Selo, 1♀, Ausgut 07, 1959, (leg. Glumac); Tetovo, 1♂, June 8, 1959, (leg. Glumac); Mavrovi Anovi, 1♂, Ausgut 30, 1959, (leg. Glumac); r. Radika, 1♂, August 30, 1959, (leg. Glumac); Tetovo, Staro Selo, 1♀, May 28, 1960, (leg. Glumac); Tetovo, 1♂, May 28, 1960, (leg. Glumac); Mavrovi Anovi, 1♂, May 30, 1960, (leg. Glumac); r. Radika, 1♀, May 31, 1960, (leg. Glumac); Mavrovi Anovi, 1♂, 1♀, August 01-03, 1961, (leg. Glumac); r. Radika, 1♂, August 29, 08.1961., (leg. Glumac) SKO. (Krpač et al, 2001): Radika, Lukovo Pole, 2♀, June 06, 1994, (leg. Krpač); river Radika, upper course, 1♂, July 04, 1995, (leg. Krpač); Mavrovo, Nichpur, 2♀, May 10, 1996, (leg. Krpač); Mavrovi Anovi, 1♂, October 10, 1997, (leg. Krpač); Mavrovi Anovi, 1♀, July 10, 1998, (leg. Krpač), SKO.

New findings: Mavrovo, village of Nichpur, 1♀, August 11, 2004, (leg. Krpač).

Comment: This is one of species that are widespread in Macedonia as well. It is registered in various habitats during the season and in numerous populations.

Genus *Syrphus* Fabricius, 1775

According to recent data by Goeldlin (1996), the genus *Syrphus* in Europe includes 9 species. Many species of this genus after revision belong to other genera, which resolved earlier confusion about the affiliation of certain species, and number of species has greatly reduced. There are 4 species in Macedonia and Sharr Mountains: *S. nitidifrons* Becker, 1921, *S. ribesii* (Linnaeus, 1758), *S. torvus* Osten-Sacken, 1875 and *S. vitripennis* Meigen, The larvae of genus feed on aphids.

117. *Syrphus nitidifrons* Becker, 1921

Habitat type: Coniferous forests of *Abies*, *Picea* and moist forests of *Pinus*.

Adult: Adults reside in forest clearings and along forest trails.

Host plant: *Amelanchier*, *Prunus serotina*, *Ranunculus repens*, *Salix*, *Sorbus aucupariae*.

Flight period: April / June.

Larva: Not described (Speight, 2001).

Distribution: From northwestern Germany, in the south to the Pyrenees; from Belgium and the Netherlands through Central Europe (Czechoslovakia, Switzerland) to the former Yugoslavia. S. nitidifrons now appears to be spreading rapidly across Atlantic parts of Europe (Speight, 2001).

Balkan Peninsula: Montenegro and Macedonia.

Macedonia: Is a rare species in Macedonia.

Material: 1 specimen (1♂).

New findings: Mavrovi Anovi, valley of a mountain stream, on flowers, 1♂, May 30, 1960, (leg. Glumac), (has a preparation of genital fittings), SKO.

Comment: This is rare species that have so far been registered on Balkan Peninsula only in Montenegro and Macedonia. Males of *S. nitidifrons* can be easily confused with males of other species of genus; and females are very similar to females of other species, and separation is even more complicated. In both sexes, *S. nitidifrons* have pair of bright markings on abdominal tergites (2-4). This is also characteristic

of three other European species *S. ribesii, S. torvus* and *S. vitripennis,* in which yellow stripes are present on tergites (3-4) but are reduced to pair of transversal light stripes (spots) (Speight, 2001).

118. *Syrphus ribesii* (Linnaeus, 1758)

Habitat type: Urban conditions, farms, orchards, horticultural lands, suburban gardens, parks, coniferous plantations, several types of deciduous and coniferous forests.

Adult: Adults live in gardens, forest clearings, and paths, hedges; and fly at altitudes up to 5m; males hover at a height of 2-5m.

Host plant: A wide range of yellow, white, pink, and blue flowers, including Compositae, Umbelliferae, *Orlaya grandiflora*, *Daucus* sp., *Euphorbia* sp., *Pastinaca* sp., *Ranunculus* sp., *Crepis* sp., *Crataegus monogyna*, *Mentha* sp., *Alyssum* sp. and the flowers of many trees and shrubs (extended list of plants by de Buck, 1990).

Flight period: April / mid-November (March in southern Europe), most massive in May and August.

Larva: Described by Dusek and Laska (1964), as aphidophagous, feeds on aphids from various plants (eg *Carduus*, *Eryngium*, *Sonchus*, Umbelliferae), from crops (*Beta*, *Triticum*, *Vicia*, *Zea*), shrubs (*Rubus* sp.) and bushes.

Distribution: From Iceland, through Finland and Scandinavia, in the south to Iberia and the Mediterranean; Canary Islands; from Ireland to the east through most of Europe in Turkey, European parts of Russia and Afghanistan; from the Urals to the Pacific coast (Kuril Islands), Japan; North America from Alaska, in the south to the central United States (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is a common and widespread species in Macedonia.

Published findings: (Glumac, 1968: 871); (Krpač et al, 2001: 182).

Material: 20 specimens (7♂, 13♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, spruce forest, on a flower *Crepis* sp., 1♀, June 30, 1959, (leg. Glumac); Mavrovi Anovi, forest, shrubs, on *Mentha* sp., 1♂, August 01-03, 1961, (leg. Glumac); Mavrovi Anovi, on *Crataegus monogyna* and *Alyssum* sp., 3♂, 6♀, August 27, 1966, (leg. Glumac), SKO. (Krpač et al, 2001): Mavrovi Anovi, 1♂, July 06, 1988, (leg. Krpač); Mavrovi Anovi, 3♀, July 26, 1994, (leg. Krpač); Mavrovi Anovi, 1♀, July 6, 1995, (leg. Krpač); Mavrovi Anovi, 2♂, July 10, 1998, (leg. Krpač) SKO.

New findings: Mavrovi Anovi, 1♀, June 04, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, July 02, 1975, (leg. Čingovski), SKO.

Comment: This species is highly migratory, widespread in Balkan Peninsula. We found it in all habitat types in Macedonia. Boyes et al, (1971) showed that in most of Europe there are two chromosomal races of *S. ribesii*, one with 2n = 8, the other with 2n = 10. It is not known whether there are taxonomic differences between the two races (Speight, 2001).

119. *Syrphus torvus* Osten-Sacken, 1875
sub. *Syrphus luniger* Meigen, 1822 in Glumac, 1968 (in part)

Habitat type: Moist coniferous forests (*Abies*, *Picea* and *Pinus*) and coniferous plantations (exotic species), deciduous forests (*Betula*, *Fagus* and acidophilic forests of *Quercus*) and tundra with dwarf shrubs; urban environment, suburban gardens, and parks.

Adult: Adults reside on forest clearings and trails; males hover at a height of 2-5m above forest paths and under tree canopies.

Host plant: Umbelliferae; *Allium ursinum*, *Aster*, *Bellis perennis*, *Brassica rapa*, *Buxus*, *Caltha*, *Cirsium arvensis*, *Crataegus*, *Euphorbia*, *Frangula alnus*, *Glaux maritima*, *Hedera*, *Hieracium*, *Oxalis*,

Prunus spinosa, *Ranunculus* (*R. illiacus*), *Rosa*, *Rubus fruticosus*, *R. idaeus*, *Salix*, *Senecio jacobaea*, *Sorbus*, *Taraxacum* (*T. officinale*), *Tussilago*, *Sambucus* sp., *Alyssum* sp., *Pastinaca* sp., *Malva* sp., i *Mentha* sp.

Flight period: March / October, the most massive in mid-April / early June and August / September.

Larva: It was described by Dusek and Laska (1964) as aphidophagous on trees, shrubs, and bushes. Kula (1982) found larvae of *S. torvus* on spruce (*Picea*) and spruce forest; the larva overwinters among the leaves on the forest floor (Speight, 2001).

Distribution: From Greenland, Iceland, Faroe Islands (Jensen, 2001), Finland and Scandinavia, in the south to Iberia and the Mediterranean; across much of Europe in Turkey and in European parts of Russia; from the Urals through Siberia to the Pacific coast (Kuril Islands), Japan, Formosa, northern India, Nepal, Thailand; in North America from Alaska to New Mexico (Speight, 2001).

Balkan Peninsula: Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Registered at several locations.

Published findings: (Glumac, 1968: 871); (Krpač et al, 2001: 181-182).

Material: 69 specimens (25♂, 44♀).

Misidentification: sub. *S. luniger* in Glumac (1968: 871) (in part): Mavrovi Anovi, dolina planinskog potoka, na cveću., 1♀, 30.05.1960., (leg. Glumac) SKO;

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 2♀, 18.07.1988, (leg. Krpač) SKO.

New findings: Mavrovi Anovi, stream valley, *Pastinaca* sp., *Malva* sp. and *Mentha* sp., 1400m.n.v., 2♂, 2♀, Ausgut 01-03, 1961, (leg. Glumac); Mavrovi Anovi, stream valley, shrubs, 1♀, Ausgut 27, 1966, (leg. Glumac); Mavrovi Anovi, 1♂, May 19, 1977, (leg. Čingovski); Mavrovi Anovi, 1♀, June 00, 1988, (leg. Krpač); Sharr Mountains, Tri Vodi, 1♂, August 30, 1990, (leg. Krpač); Mavrovi Anovi, 1♀, July 09, 1991, (leg. T. Ivanovski); Mavrovi Anovi, 1♂, May 25, 1995, (leg. Krpač); Mavrovi Anovi, 4♀, October 10, 1997, (leg. Krpač); Mavrovi Anovi, 5♂, 4♀, July 10, 1998, (leg. Krpač); Mavrovi Anovi, 1♂, July 10, 1998, (leg. Krpač), SKO.

Comment: This species is common in Macedonia, registered in several localities, more numerous in mountainous areas. Due to its great similarity, it can be mixed with other species of the genus.

120. *Syrphus vitripennis* Meigen, 1822

Habitat type: Several types of deciduous, coniferous forests and coniferous plantations; it is found in urban areas, next to fences, suburban gardens, and parks.

Adult: Adults reside along forest paths and clearings; males hover at a height of 2-5m next to trees and shrubs.

Host plant: White Umbelliferae; *Achillea millefolium*, *Brassica rapa*, *Campanula rapunculoides*, *Cirsium*, *Convolvulus*, *Crataegus*, *Euphorbia*, *Leontodon*, *Origanum vulgare*, *Ranunculus*, *Rosa*, *Rubus fruticosus*, *Orlaya grandiflora*, *Daucus* sp., *Torilis* sp., *Sambucus* sp., *Eryngium campestre*, *Crataegus monogyna*, *Anthriscus* sp., *Alyssum* sp., *Pastinaca sativa* and *Mentha* sp.

Flight period: End of April / October (March in southern Europe), most massively May / June and August.

Larva: It was described by Dusek and Laska (1964), as aphidophagous, on trees, shrubs, bushes (*Viburnum*), lianas (*Humulus*) and many other plants (*Cirsium*, *Nicotiana*). Kula (1982) noticed that larvae overwinter on the soil of spruce forest (*Picea*).

Distribution: In most of the Palearctic region, North Africa; in North America from Alaska to California; Formosa (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Common species.

Published findings: (Glumac, 1968: 872); (Krpač et al, 2001: 181-182).

Material: 26 specimens (19♂, 7♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, dolina potoka, na *Pastinaca sativa* i *Mentha* sp., 2♂, Ausgut 01-03, 1961, (leg. Glumac), SKO. (Krpač et al, 2001): Mavrovi Anovi, 1♀, June 22, 1975, (leg. Čingovski) SKO.

New findings: Mavrovi Anovi, 1♀, July 09, 1991, (leg. Krpač); Mavrovo, Nichpur, 2♀, May 10, 1996, (leg. Krpač); Mavrovi Anovi, 14♀, October 10, 1997, (leg. Krpač); Mavrovi Anovi, 3♂, 3♀, July 10, 1998, (leg. Krpač), SKO.

Comment: This species is highly migratory and widespread in Macedonia. It is found in different habitats at different altitudes, often together with the species *S. ribesii*. Some European female specimens attributed to *S. rectus* may represent a variant of *S. vitripennis*, but if existing keys are used, they may be confused with *S. ribesii* (Speight, 2001).

Genus *Volucella* Geoffroy, 1762

On the European continent, the genus *Volucella* is represented by six species, of which five are registered in Macedonia and Sharr Mountains: *V. bombylans* (Linnaeus, 1758), *V. inanis* (Linnaeus, 1758), *V. inflata* (Fabricius, 1794), *V. pellucens* (Linnaeus, 1758) and *V. zonaria* (Poda, 1761); 5 species are known. Larvae of the genus *Volucella* develop in wasp nests by feeding on their larvae and offspring.

121. *Volucella bombylans* (Linnaeus, 1758)
as *Volucella bombylans* L. var. *plumata* Deg., in Glumac, 1968

Habitat type: Forests and wetlands; open spaces in several types of deciduous forests, moist forests of *Pinus*, along edges of swamps, next to fences on farms; in evergreen forests of oak - *Quercus ilex* in southern Europe.

Adult: Adults reside along forest paths and clearings, in thickets and old forests; on wet pastures and length of boundaries in fields; fly at altitudes up to 2m; resting on low-growing vegetation and shrubs.

Host plant: A wide range of flowers, various Compositae and Umbelliferae, *Dianthus* sp., *Verbascum* sp., *Geum coccineum*, and flowering trees (extended list of flowers in de Buck, 1990).

Flight period: May / August, and September at higher altitudes and northern latitudes.

Larva: The final stage of larvae and pupae was described by Rotheray (1999b). According to Smith (1955), larva is known detritor and predator of larvae in *Bombus* nests, where it is found at the bottom of the nest as shown by Schmid (1996). Barkemeyer (1994) lists species of the genera *Bombus* and *Vespula* in whose nests larva of this hoverfly is present.

Distribution: From northern Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through Central and Southern Europe in Russia to the Pacific coast and Japan; in North America from Alaska to California and Georgia (Spaight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Registered as mountain species.

Published findings: Glumac, (1968: 861) as *V. bombylans* var. *plumata* in Glumac (1968: 861); (Krpač et al, 2001: 183).

Material: 9 specimens (2♂, 7♀).

Unverified literature data: (Glumac, 1968: 861): Mavrovi Anovi, dolina potoka, na *Pastinaca sativa*, 1♀, August 01-03, 1961, (leg. Glumac). as *V. bombylans* var. *plumata* (Glumac, 1968): Sharr Mountains, stream valley, on *Roripa* sp., 1♂, May 28, 1960, (leg. Glumac).

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 1♂, July 06, 1995, (leg. Krpač) SKO.

New findings: Mavrovi Anovi, 2♀, July 15, 1970, (leg. Čingovski); Mavrovi Anovi, 1♀, July 02, 1975, (leg. Čingovski); Mavrovi Anovi, 1♀, May 19, 1977, (leg. Čingovski); Mavrovo, 1♀, July 03, 1978, (leg. Čingovski); Mavrovi Anovi, 1♀, July 16, 1981, (leg. Čingovski), SKO.

Comment: The species has been recorded in all countries of the Balkan Peninsula. In Macedonia, it is registered in the mountains at several locations.

122. *Volucella inanis* (Linnaeus, 1758)

Habitat type: Forests; open spaces in different types of deciduous forests.

Adult: Adults reside in the canopy of trees except when visiting flowers; during migration they can be found in different places.

Host plant: Yellow Compositae; Umbelliferae; *Achillea*, *Allium*, *Buddlea*, *Cirsium*, *Epilobium*, *Eupatorium*, *Hedera*, *Knautia*, *Mentha*, *Sambucus*, *Scabiosa*, *Solidago*, *Thymus*, *Valeriana*.

Flight period: Beginning of July / end of September.

Larva: The morphology of larva was described by Hartley (1961). According to Rupp (1989), the first and second stages of larval development are parasitic in wasp nests, on larvae of *Vespula germanica* and *V. vulgaris*, while the third developmental stage is more parasitoid (destroys its host). *Volucella inanis* seems to prefer wasps at certain height (e.g., attics where *Vespula germanica* is more common than *V. vulgaris*) (Speight, 2001).

Distribution: From southern Finland and Scandinavia, in the south to Spain and the Mediterranean (and islands, e.g., Crete), North Africa and Asia Minor (Syria); from Britain (southern England), in the east through central and southern Europe in Turkey and European parts of Russia, through Siberia to the Pacific coast; Afghanistan, Mongolia, China (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: It is common species in Macedonia.

Published findings: (Glumac, 1968: 861); (Krpač et al, 2001: 183).

Material: 2 specimens (1♂, 1♀).

Verified literature data: (Glumac, 1968) (in part): Sharr Mountains; the valley of the river Radika; Mavrovi Anovi, stream valley, bush, 1♀, August 27, 1966. (leg. Glumac) SKO. (Krpač et al, 2001): Mavrovo, 1♂, July 26, 1994, (leg. Krpač), SKO.

Comment: *V. inanis* in Macedonia is registered in several localities but in individual specimens.

123. *Volucella inflata* (Fabricius, 1794)

Habitat type: Deciduous forests with old trees, alluvial young and old forests, and thermophilic forests of *Quercus*.

Adult: Adults stay in treetops, come down to visit flowers and drink sap from tree trunks.

Host plant: Umbelliferae; *Cornus*, *Crataegus*, *Euonymus*, *Frangula*, *Ligustrum*, *Rubus*, *Sambucus*, *Viburnum, Querqus* sp., *Euphorbia* sp.

Flight period: May / July.

Larva: The final developmental stage of larva and pupa was described by Rotheray (1999b), found on debris in tunnels made by *Cossus* in *Quercus* trees. Stubbs and Falk (1983) state that females lay eggs in succulent material of rotten *Populus* and *Quercus* trees. Females have been seen laying eggs in cracks in the bark of old *Populus* and *Quercus* trees. There have been earlier opinions that this species probably develops on humus in tree cavities in secretions created by *Cossus* larvae. Collected information indicates that larva *Volucella inflata* develops in subaquatic mixture (places where some other insects

are active and create secretions and humus). According to Rotheray (1999b), the appearance of the oral apparatus of this larva indicates that it is more of a saprophage than a predator (Speight, 2001).

Distribution: from Sweden and northern Germany, in the south to the Pyrenees and northern Spain; from Britain (England, Wales), to the east via Central Europe in the European parts of Russia and the Caucasus; former Yugoslavia and Bulgaria (Speight, 2001).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species (Glumac, 1968).

Published findings: (Glumac, 1968).

Material: 4 specimens (4♂).

New findings: Tetovo, Staro Selo, on *Euphorbia* sp., 1♂, May 28, 2003, (leg. Krpač); the valley of the river Radika; 3♂, July 04, 1995, (leg. Krpač), SKO.

Comment: The distribution of this species in Europe is local. In Macedonia, it is common species, which is registered at the number of localities, but in individual specimens. Published specimens of the species in Glumac (1968), which refer to localities in Macedonia, were not found in any of the existing collections of surfides, so this material has not been checked.

124. *Volucella pellucens* (Linnaeus, 1758)

Habitat type: Deciduous forests; mesophilic forests of *Fagus*, acidophilic and thermophilic forests of *Quercus*; shrubs and hedges.

Adult: Adults are found on forest clearings, next to trails in various forests, thickets, and hedges; fly at altitudes of 1-3m; males often hover at heights up to 7m above \ trail.

Host plant: Wide range of flowers of low-growing plants, shrubs, and trees. Extended list of flowers by de Buck (1990).

Flight period: May / October.

Larva: Larva was described by Hartley (1961), as a waste collector or predator of larvae in a wasp's nest (*Vespula*); they are found at the bottom of the nest (Schmid, 1996). Barkemeyer (1994) describes the biology of this species.

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through Eurasia to Japan; India and Malaysia in the Oriental Region (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species in forested areas.

Published findings: (Glumac, 1968: 861); (Krpač et al, 2001: 183).

Material: 5 specimens (3♂, 2♀).

Unverified literature data: (Glumac, 1968): Tetovo, Vata Bogunović; Mavrovi Anovi.

Verified literature data: (Krpač et al, 2001): Mavrovi Anovi, 2♀, July 4, 1995, (leg. Krpač).

New findings: Mavrovi Anovi, 1♂, July 02, 1975, (leg Čingovski); Mavrovi Anovi, 1♂, July 05, 1975, (leg Chingovski); Mavrovi Anovi, 1♂, July 18, 1988, (leg. Topukova), SKO.

Comment: *V. pellucens* is widespread species in the Balkans. In Macedonia, it is common and numerous species in forest ecosystems.

125. *Volucella zonaria* (Poda, 1761)

Habitat type: Forests and open spaces; mesophilic forests of *Fagus*, thermophilic forests of *Quercus*, shrubs, suburban gardens, and parks.

Adult: Adults reside in forest fields and thickets; males hover at height of 2-5m along forest paths and clearings; visit shrub flowers; they meet at different places in their migration; they rest even on ships, and by ferries in the channels between France and Britain.

Host plant: Umbelliferae; *Buddleja*, *Carduus*, *Eryngium campestre*, *Eupatorium*, *Hedera helix*, *Knautia*, *Ligustrum vulgare*, *Ranunculus*, *Rubus*, *Sambucus*, *Scabiosa*, *Solidago*, *Thymus*.

Flight period: mid-June.

Larva: The final developmental stage of larva and pupa was described by Rotheray (1999b). Fraser (1946) describes the biology of the larva. It is known that the development of larvae of this species is closely related to larvae of wasps, *Vespa crabro*, and species of genus *Vespula*, with the role of waste collectors and predators of larvae in nests of these wasps.

Distribution: From Poland, in the south to the Mediterranean (islands, e.g., Crete) and North Africa; from Britain (southern England), in the east through Central and Southern Europe (Italy, former Yugoslavia, Greece) in Turkey and in European parts of Russia, through Siberia to the Pacific coast; Iran and Mongolia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: A common species in forest areas.

Published findings: (Glumac, 1968: 861); (Krpač et al, 2001: 183).

Material: 6 specimens (2♂, 4♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi; (Krpač et al, 2001): Mavrovi Anovi, 1♂, 1♀, July 24, 1970, (leg. Čingovski); Mavrovi Anovi, 2♀, July 02, 1975, (leg. Čingovski) SKO.

New findings: Tetovo, village of Vratnica, 1♂, July 21, 1971, (leg. Čingovski); Tetovo, at *Ligustrum vulgare*, 1♀, September 13, 1992, (leg. T. Ivanovski). SKO.

Comment: The species is registered in all countries of the Balkan Peninsula. In Macedonia, it is common in forest ecosystems, but it has also been observed in other habitat types in different altitudes.

Genus *Xanthandrus* Verrall, 1901

This genus includes 3 species. One of them *Xanthandrus comtus* (Harris), in 1776 is present and widespread in Europe; the other two are limited to the island of Madeira and the Azure Islands (van der Goot, 1981). *X. comtus*, which is also registered on Sharr Mountains, is found in Macedonia. Larvae are carnivorous, feeding on aphids and moth caterpillars.

126. *Xanthandrus comtus* (Harris, 1776)

Habitat type: Deciduous, deciduous evergreen and coniferous forests; *Fagus* forests, *Quercus*, *Pinus,* and Shrub.

Adult: Adults reside in forest clearings and paths, in dense bushes and treetops; resting on shrub leaves; males hover at height of 3-5m.

Host plant: Umbelliferae; *Arbutus unedo*, *Filipendula*, *Juncus*, *Leontodon*, *Lonicera*, *Mentha aquatica*, *Rosa*, *Rubus*, *Sucissa*, *Orlaya grandiflora*, *Pastinaca sativa*, *Eryngium* sp., *Ranunculus* sp., *Lapsona* sp. and *Chrysanthemum* sp.

Flight period: May / October (April / November in southern Europe).

Larva: Described by Dusek and Laska (1967). Larvae are known as predators of aphids and caterpillars of various moths (eg Tortricidae), both on trees and low-growing plants. Larvae are predators and caterpillars of pine moths (*Thaumetopoea pinivora* and *Th. pityocampa*) (Speight, 2001).

Distribution: From the Faroe Islands (Jensen, 2001) and southern Norway to the Iberian Peninsula;

from Ireland in the east through Central and Southern Europe to Russia and the Pacific coast; Japan; Formosa (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Common species in forests.

Published findings: (Glumac, 1968: 870).

Material: 9 specimens (3♂, 6♀).

Verified literature data: (Glumac, 1968): Mavrovi Anovi, dolina potoka, na *Pastinaca sativa*, 1♀, 01-03.08.1961, (leg. Glumac); Mavrovi Anovi, i na shiblju, 1♂, 1♀, 27.08.1966., (leg. Glumac) SKO.

New findings: Mavrovi Anovi, 1♂, 1♀, 09.07.1991, (leg. T. Ivanovski); Mavrovi Anovi, 1♂, 06.06.1996, (leg. Krpač); Mavrovi Anovi, 2♀, July 10, 1998, (leg. Krpač); Mavrovi Anovi, meadow, on a flower *Lysimachia vulgaris*, 1♀, 26.07.2004, (leg. Krpač), SKO.

Comment: This is widespread species on Balkan Peninsula. In Macedonia, it is common species in forest ecosystems.

Genus *Xanthogramma* Schiner, 1860

According to Peck (1988), European species of genus *Xanthogramma* are represented by 7 species, some of which have unresolved status. Some authors, such as Séguy (1961), believe that the species *X. laetum* is so different that it could be separated into special genus *Olbiosyrphus*. Differences between *Xanthogramma* species are given in keys of van der Goot (1981) and Marcos-Garcia (1998). Two species, X. catalonicum Andreu and *X. flavomarginatum* Strobl, are still of precarious status (Speight, 2004). Two species have been registered in Macedonia: *X. citrofasciatum* (De Gerr, 1776) and *X. pedissequum* (Harris, 1780). 1 species was confirmed on Sharr Mountains. The larvae of the genus feed on aphids.

127. *Xanthogramma pedissequum* (Harris, 1780)
syn. *Xanthogramma ornatum* (Meigen, 1839) in Glumac, 1968

sub. *Xanthogramma maculipennis* Mik, 1887 in Glumac, 1968

Habitat type: Open spaces and forests; pastures and grassy forest clearings (deciduous and deciduous evergreen forests); occasionally along the roadside, suburban gardens, and parks.

Adult: Adults fly low between tall grasses; resting on leaves of low-growing plants.

Host plant: Umbelliferae; yellow Compositae; *Berberis*, *Caltha*, *Crataegus*, *Euphorbia*, *Lamium*, *Ligustrum*, *Potentilla erecta*, *Pulicaria*, *Ranunculus*, *Rosa*, *Rubus*, *Sambucus nigra*, *Stellaria*, *Ulmus*, *Cornus sanguinea*, *Orlaya grandiflora*, *Eryngium* sp., *Mentha* sp. and *Heracleum sphondylium*.

Flight period: May / September, March / April in southern Europe.

Larva: The biology of larva was documented by Pontin (1960). Larva is described by Rotheray and Gilbert (1989); larvae are aphid predators that live in roots, where they are raised by ants of the genus *Lasius* (Speight, 2001).

Distribution: From central Norway, in the south to Spain and Portugal; from Britain, in the east through Central and Southern Europe, to European Russia, Turkey and Israel; Western Siberia (Speight, 2001).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Ordinary species.

Published findings: as *X. ornatum* in Glumac (1968: 876); (Krpač et al, 2001: 181-182).

Material: 6 specimens (3♂, 3♀) SKO.

Misidentification: sub. *X. maculipenne* in Glumac (1968: 876): Tetovo, Vata Bogunović, meadow, on a flower *Ranunculus* sp., 1♀, 07.06.1959, (leg. Glumac), SKO.

Verified literature data: as *X. ornatum* in Glumac (1968): Tetovo, Staro Selo, wet meadow, 1♂, 07.06.1959, (leg. Glumac); Radika Valley, meadow, on the flower of *Euphorbia* sp. and *Heracleum sphondylium*, 1♂, 1♀, 31.06.1960., (leg. Glumac) SKO. (Krpač et al, 2001): Mavrovo, s. Ničpur; 1♂, (leg. Krpač), SKO.

New findings: Mavrovi Anovi, meadow, on the flower of *Euphorbia* sp., 1♀, 17.05.2003, (leg. Krpač).

Comment: The species is widespread in Balkan Peninsula. In Macedonia, it is registered in several localities, as ordinary species.

Genus *Xylota* Meigen, 1822

The genus *Xylota* includes 11 European species, according to Peck (1988). Most recent species is added *X. jakutorum* Bagatschanova, 1980 (Mutin and Gilbert, 1999; Vujić and Milankov, 1999). 6 species were registered in Macedonia: *X. florum* (Fabricius, 1805), *X. ignava* (Panzer, 1798), *X. segnis* (Linnaeus, 1758), *X. sylvarum* (Linnaeus, 1758), *X. tarda* Meigen, 1822 and *X. xanthocnema* Collin, 1939. 3 species have been confirmed on Sharr Mountains. Larvae of this genus develop in rotten trunks.

128. *Xylota segnis* (Linnaeus, 1758)
Zelima segnis (Linnaeus, 1758) in Glumac, 1968 (in part)

Habitat type: Forests; several types of coniferous and deciduous forests; anthropophilic species, can be found far from forests, hedges, and suburban gardens.

Adult: Adults fly around leaves of shrubs and bushes, or on ground next to logs and trees; can be found on fallen deciduous and coniferous trees.

Host plant: Umbelliferae; *Corylus, Crataegus*, *Hedera*, *Heracleum*, *Solidago virgaurea*, *Sorbus aucuparia*, *Tilia*, *Viburnum opulus*. De Buck (1985) found that *X. segnis* collects large amounts of pollen from leaf surface and can also swallow pollen grains from feaces of other surfides.

Flight period: May / September and the most massive in June; occasionally in April (March / April in southern Europe) it can survive in November.

Larva: Described by Hartley (1961), found under bark of rotten trees, deciduous and coniferous logs; in moist tree cavities and in rotting plant waste, e.g., silage, wet sawdust, and rotten potatoes (Speight, 2004).

Distribution: Throughout Europe except the far north; North Africa; Caucasus; across Eurasia to the Pacific coast and Japan; eastern parts of North America (Speight, 2004).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: The most common species of this genus.

Published findings: as *Z. segnis* in Glumac (1968: 851).

Material: 4 specimens (1♂, 3♀).

Verified literature data: as *Z. segnis* in Glumac (1968: 851) (in part): Sharr Mountains; Tetovo, Azajnica. Vata Bogović, meadow, 1♂, June 07, 1959, (leg. Glumac), SKO.

New findings: valley of the river Radika, Pilana, 1♀, September 60, 1994, (leg. Krpač); Mavrovo, s. Nichpur, 2♀, October 08, 1997., (leg. Krpač). SKO.

Comment: The species is widespread in the Balkan Peninsula. It is the most common and most numerous species of genus *Xylota* in Macedonia. It is found mainly in forest ecosystems.

129. *Xylota sylvarum* (Linnaeus, 1758)
Zelima sylvarum (Linnaeus, 1758) in Glumac, 1968

Habitat type: Forests; several types of coniferous and deciduous forests with old trees; along streams and in deciduous evergreen oak forests (*Quercus ilex*).

Adult: Adults reside along forest paths and along edges of clearings; they fly around leaves of shrubs (*Pteridium*) and low-growing plants; sometimes on tree trunks.

Host plant: Ranunculus, *Rubus idaeus*. De Buck (1985) found that *X. sylvarum* can collect pollen from leaf surfaces and from the feces of other surfides.

Flight period: End of May / September, and most massive in July.

Larva: Described by Hartley (1961), which he found in damp, mushroom-covered trees, and stumps of decaying *Abies*, *Fagus* and *Quercus*, usually under tree bark. Rotheray (1990) assumes that decaying trees are probably the most common habitats of larvae of this species; Rotheray (1994) states that larvae were also found in roots of *Abies* and *Fagus*. Rotheray (2004) expands the list of trees on which develop larvae of this species (*Fraxinus*, *Picea*, *Populus tremula* and *Pseudotsuga*) (Speight, 2004).

Distribution: From Finland and Scandinavia, in the south to the Iberian Peninsula; from Ireland, in the east through most of northern and central Eurasia to the Pacific coast; in southern Europe it is known in Italy, the former Yugoslavia, Greece and Turkey (Speight, 2004).

Balkan Peninsula: Slovenia, Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, Bulgaria, and Greece.

Macedonia: Rare species.

Published findings: as *Z. sylvarum* in Glumac (1968: 851).

Material: 3 specimens (3♀) SKO.

Verified literature data: as *Z. sylvarum* in Glumac (1968: 851): Mavrovi Anovi, stream valley, on leaves, 1♀, August 01-03, 1961; shrubs, 1♀, August 27, 1966 (leg. Glumac) IBNS;

New findings: Mavrovi Anovi, 1♀, 02.07.1975, (leg. Čingovski).

Comment: This species is widespread throughout Balkan Peninsula, often in forest habitats at altitudes up to 1500m. In Macedonia, rare species is registered in mountains with individual specimens.

130. *Xylota xanthocnema* Collin, 1939
Zelima xanthonema Collin, 1939 in Glumac, 1968

Habitat type: Forests; deciduous forests, from *Fagus* / *Picea* forest zone to alluvial old seasonally flooded forests.

Adult: Adults reside along forest paths and clearings; fly around leaves of bush *Rubus*, and shrubs; resting in the sun on deciduous low-growing plants, e.g., *Petasites*; on trees and logs.

Host plant: *Torilis* sp. and *Sambucus* sp. So far there are no reports of flower visits. Probably *X. xanthocnema* collect pollen and sugar from the leaf surface as *X. sylvarum*.

Flight period: End of May / September, and most massive in July.

Larva: Described by Hartley (1961), which he found in the rotten cocoons of *Taxus*. Krivosheina (2001) reports on larvae of species that developed in stagnant water in rotting depression on *Abies*. Rotheray (2004) also writes about larva found in rotting hollow on *Quercus* (Speight, 2004).

Distribution: From Denmark, in the south to the Pyrenees; from Britain (England), in the east through Central Europe, and Italy and the former Yugoslavia in southern Europe, the European part of Russia and the Caucasus Mountains (Speight, 2004).

Balkan Peninsula: Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece.

Macedonia: Very rare species (Glumac, 1968).

Published findings: as *Z. xanthonema* in Glumac (1968: 851); (Krpač et al, 2001: 183).

Material: 2 specimens (1♂, 1♀).

Verified literature data: as *Z. xanthonema* in Glumac (1968): Mavrovo, valley of a stream, shrubs, 1♀, August 27, 1966, (leg. Glumac), SKO. (Krpač et al, 2001): Mavrovi Anovi, 1♂, July 06, 1995, (leg. Krpač) SKO.

Comment: *X. xanthocnema* is registered in habitats of beech and coniferous forests of central part of Balkan Peninsula. In Macedonia, it turned out that it may not be as rare species as stated in Glumac (1968). It is registered at several localities, but mostly with individual specimens.

The prevalence of hoverflies depends on the type of larval development

Surfside adults feed exclusively on pollen and plant nectar. In many species of surfside, development of larvae has not been fully investigated, but it is known that they feed differently, and their division depends on that. It is known that some species were grown in laboratory conditions in terms of studying the stage of larval development. Larvae of many surfside have not yet been studied and there is no data on their biology. Some larvae are zoophagous, some are phytophagous and mycophagous, and some are saprophage, so-called "cleaners".

We found that the most numerous are zoophagous (predatory) hoverflies larvae represented with 59 species, i.e., 45.38% of species. Known predators of aphids are larvae from the genera *Baccha* (1 species), *Chrysotoxum* (9 species), *Dasysyrphus* (5 species), *Didea* (1 species), *Epistrophe* (3 species), *Episyrphus* (1 species), *Eupeodes* (1 species), *Fagisyrphus* (1 species), *Heringia* (1 species), *Melangyna* (1 species), *Melanostoma* (2 species), *Meliscaeva* (2 species), *Paragus* (2 species), *Parasyrphus* (2 species), *Pipicella* (4 species), *Platycheirus* (7 species). *Scaeva* (3 species), *Sphaerophoria* (1 species), *Syrphus* (4 species), *Xanthandrus* (1 species), and *Xanthogramma* (1 species). Larvae of the genus *Volucella* (4 species), are predators of wasp larvae and "cleaners" of their nests.

Somewhat less are phytophagous larvae present with 43 species, i.e., 33.08%. These include larvae of genera *Eumerus* (3 species) and *Merodon* (6 species) that develop in tissues of bulbous plants. Then larvae of genera *Cheilosia* (29 species) that feed on plant tissues or fungi and larvae of genera *Chrysogaster* (2 types) and *Othonevra* (2 types) that feed on aquatic plant tissues.

Saprophague larvae are present with 28 species, i.e., 21.54% of the total number of species on the Sharr Mountains. Larvae of genera *Brachypalpoides* (1 species), *Caliprobola* (1 species), *Calicera* (1 species), *Ceriana* (1 species), *Myolepta* (1 species), and *Sphegina* (2 species), develop in trunks of which in cavities of branches, at the root of rotten stumps or feed on waste of rotten vegetation. Larvae of some genera such as *Eristalinus* (1 species), *Eristalis* (7 species), *Helophilus* (2 species), *Myathropa* (2 species), *Neoascia* (5 species), *Syritta* (1 species), and *Xylota* (3 species) are aquatic saprophages, develop in an aquatic environment rich in organic matter, or animal faces. *Volucella inflata* larvae are more saprophagic than predatory (they are found in plant secretions but have not been proven to feed on them).

List of species hoverflies by type of larval development

ZOOPHAGOUS LARVAE (59)

***Baccha elongata* (Fabricius, 1775)**
***Chrysotoxum bicinctum* (Linnaeus, 1758)**
***Chrysotoxum cautum* (Harris, 1776)**
***Chrysotoxum cisalpinum* Rondani, 1845**
***Chrysotoxum elegans* Loew, 1841**
***Chrysotoxum fasciolatum* (de Geer, 1776)**
***Chrysotoxum festivum* (Linnaeus, 1758)**
***Chrysotoxum lessonae* Giglio Tos, 1890**
***Chrysotoxum octomaculatum* Curtis, 1837**
***Chrysotoxum vernale* Loew, 1841**
***Dasysyrphus albostriatus* (Fallen, 1817)**
***Dasysyrphus pinastri* (De Geer, 1776) sensu Doczkal (1996a)**
***Dasysyrphus postclaviger* (Stys et Moucha, 1962)**
***Dasysyrphus tricinctus* (Fallen, 1817)**
***Dasysyrphus venustus* (Meigen, 1822)**
***Didea fasciata* Macquart, 1834**
***Epistrophe diaphana* (Zetterstedt, 1843)**
***Epistrophe eligans* (Harris, 1780)**
***Epistrophe nitidicollis* (Meigen, 1822)**
***Episyrphus balteatus* (de Geer, 1776)**
***Eupeodes corollae* (Fabricius, 1794)**
***Eupeodes lapponicus* (Zetterstedt, 1838)**
***Eupeodes latifasciatus* (Macquart, 1829)**
***Eupeodes luniger* (Meigen, 1822)**
***Fagisyrphus cinctus* (Fallen, 1817)**
***Heringia latitarsis* (Egger, 1865)**
***Melangyna labiatarum* (Verrall, 1901)**
***Melanostoma mellinum* (Linnaeus, 1758)**
***Melanostoma scalare* (Fabricius, 1794)**
***Meliscaeva auricollis* (Meigen, 1822)**
***Meliscaeva cinctella* (Zetterstedt, 1843)**
***Paragus haemorrhous* Meigen, 1822**
***Paragus pecchiolii* Rondani, 1857**
***Parasyrphus punctulatus* (Verrall, 1873)**
***Pipizella annulata* (Macquart, 1829)**
***Pipizella divicoi* (Goeldlin, 1974)**
***Pipizella maculipennis* (Meigen, 1822)**
***Pipizella viduata* (Linnaeus, 1758)**
***Platycheirus albimanus* (Fabricius, 1781)**
***Platycheirus ambiguus* (Fallen, 1817)**
***Platycheirus immaculatus* (Ohara, 1980)**
***Platycheirus manicatus* (Meigen, 1822)**
***Platycheirus meridimontanus* Nielsen, 2004**
***Platycheirus peltatus* (Meigen, 1822)**
***Platycheirus scutatus* (Meigen, 1822)**
***Scaeva dignota* (Rondani, 1857)**
***Scaeva selenitica* (Meigen, 1822)**
***Scaeva pyrastri* (Linnaeus, 1758)**
***Sphaerophoria scripta* (Linnaeus, 1758)**
***Syrphus nitidifrons* Becker, 1921**
***Syrphus ribesii* (Linnaeus, 1758)**
***Syrphus torvus* Osten-Sacken, 1875**
***Syrphus vitripennis* Meigen, 1822**
***Volucella bombylans* (Linnaeus, 1758)**
***Volucella inanis* (Linnaeus, 1758)**
***Volucella pellucens* (Linnaeus, 1758)**
***Volucella zonaria* (Poda, 1761)**
***Xanthandrus comtus* (Harris, 1776)**
***Xanthogramma pedissequum* (Harris, 1780)**

PHYTOPHAGOUS LARVAE (43)

***Cheilosia aerea* Dufour, 1848**
***Cheilosia albipila* (Meigen, 1838)**
***Cheilosia albitarsis* (Meigen,1822) sensu Doczkal, 2000**
***Cheilosia antiqua* (Meigen, 1822)**
***Cheilosia barbata* Loew, 1857**
***Cheilosia bracusi* Vujić et Claussen, 1994**
***Cheilosia canicularis* (Panzer, 1801)**
***Cheilosia fasciata* Schiner et Egger, 1853**
***Cheilosia frontalis* Loew, 1857**
***Cheilosia gigantea* (Zetterstedt, 1838)**
***Cheilosia herculana* Bradescu, 1982**
***Cheilosia himantopa* (Panzer, 1798)**
***Cheilosia illustrata* (Harris, 1776)**
***Cheilosia impressa* Loew, 1840**
***Cheilosia laticornis* Rondani, 1857**
***Cheilosia melanura* Becker, 1894**
ssp. *rubra* Vujic, 1996
***Cheilosia mutabilis* (Fallen, 1817)**
***Cheilosia nigripes* (Meigen, 1822)**
***Cheilosia orthotricha* Vujic et Claussen, 1994**
***Cheilosia pascuorum* Becker, 1894**
***Cheilosia proxima* (Zetterstedt, 1843)**
***Cheilosia ranunculi* Doczkal, 2000**
***Cheilosia scutellata* (Fallen, 1817)**
***Cheilosia soror* (Zetterstedt, 1843)**
***Cheilosia urbana* (Meigen, 1822)**
***Cheilosia variabilis* (Panzer, 1798)**
***Cheilosia vernalis* (Fallen, 1817)**
***Cheilosia vicina* (Zetterstedt, 1849)**
***Cheilosia vulpina* (Meigen, 1822)**
***Chrysogaster basalis* Loew, 1857**
***Chrysogaster solstitialis* (Fallen, 1817)**
***Eumerus amoenus* Loew, 1848**
***Eumerus olivaceus* Loew, 1848**
***Eumerus tuberculatus* Rondani, 1857**
***Melanogaster nuda* (Macquart, 1829)**
***Merodon aberrans* Egger, 1860**
***Merodon clavipes* (Fabricius, 1794)**
***Merodon equestris* (Fabricius, 1794)**
***Merodon loewi* van der Goot, 1964**
***Merodon nigritarsis* Rondani, 1845**
***Merodon ruficornis* Meigen, 1822**
***Orthonevra montana* Vujić, 1999**
***Orthonevra nobilis* (Fallen, 1817)**

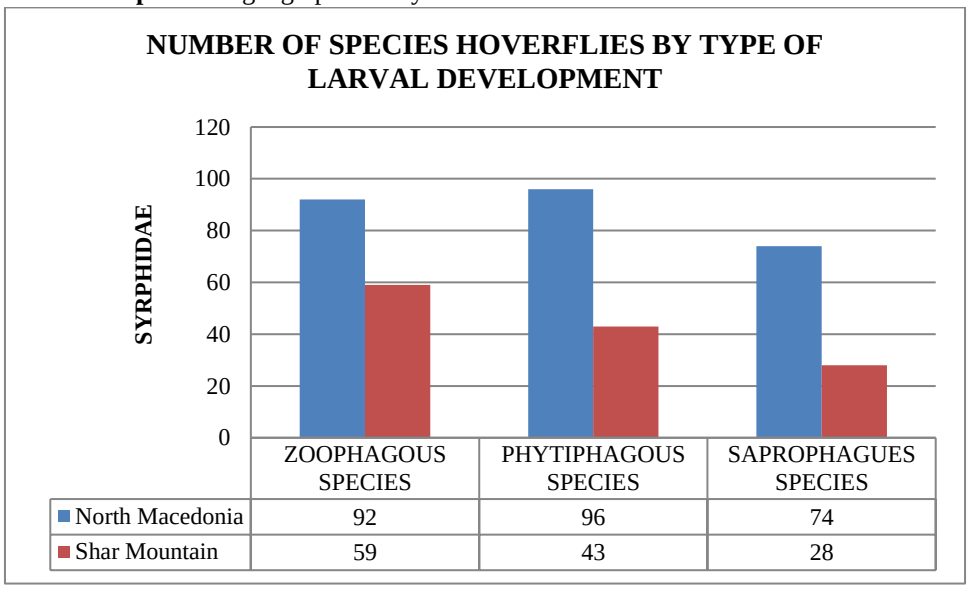
SAPROPHAGOUS LARVAE (28)

***Brachypalpoides lentus* (Meigen, 1822)**
***Caliprobola speciosa* (Rossi, 1790)**
***Callicera fagesii* Guerin-Meneville, 1844**
***Ceriana conopsoides* (Linnaeus, 1758)**
***Eristalinus sepulchralis* Linnaeus, 1758)**
***Eristalis arbustorum* (Linnaeus, 1758)**
***Eristalis interrupta* (Poda, 1761)**
***Eristalis jugorum* Egger, 1858**
***Eristalis lineata* (Harris, 1776)**
***Eristalis pertinax* (Scopoli, 1763)**
***Eristalis similis* (Fallen, 1817)**
***Eristalis tenax* (Linnaeus, 1758)**
***Helophilus pendulus* (Linnaeus, 1758)**
***Helophilus trivittatus* (Fabricius, 1805)**
***Myathropa florea* (Linnaeus, 1758)**
***Myolepta dubia* (Fabricius, 1805)**
***Neoascia annexa* (Muller, 1776)**
***Neoascia meticulosa* (Scopoli, 1763)**
***Neoascia obliqua* Coe, 1940**
***Neoascia podagrica* (Fabricius, 1775)**
***Neoascia unifasciata* (Strobl, 1898)*Sphegina clunipes* (Fallen, 1816)**
***Sphegina sublatifrons* Vujic, 1990**
***Syritta pipiens* (Linnaeus, 1758)**
***Volucella inflata* (Fabricius, 1794)**
***Xylota segnis* (Linnaeus, 1758)**
***Xylota sylvarum* (Linnaeus, 1758)**
***Xylota xanthocnema* Collin, 1939**

Table 1. Zoogeographic analysis

Syrphidae	North Macedonia	Sharr Mountains
Zoophagous species Nº / %	92 / 35.12%	59 / 45.38%
Phytiphagous species Nº / %	96 / 36.64%	43 / 33.08%
Saprophagues species Nº / %	74 / 28.24%	28 / 21.54%
Total species Nº / %	262 / 100%	130 / 100%

Graph 2. Zoogeographic analysis of hoverflies fauna on Sharr Mountains



Studying the distribution of hoverflies species largely contributes to the knowledge of its original central distribution. Widespread species are not problematic in defining areas. Problems occur with the type of area enjoyment; there are data that show continuity, that is, distribution is shown in sequence. This problem is especially pronounced in newly described species for which there is not enough data on their distribution, so it must be known that they do not exist in other localities. In addition to this, there are species that are closely related, and in which it is very difficult to conclude where the source of this central origin is and spreading. Such species are often treated as "species with special surfaces". Since there is no single criterion for grouping species based on the type of area, a total of different authors was recorded for different areas.

Representation of various zoogeographical elements in Sharr Mountains

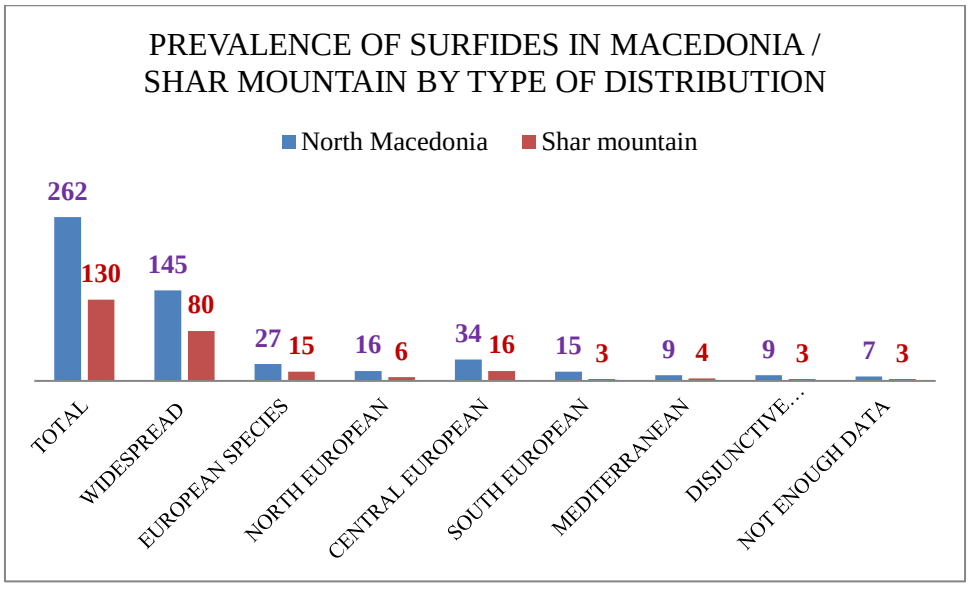
Analyzed material from an area of Sharr Mountains shows that widespread taxa are the most numerous (80), which is 55.17% of 145 widespread taxa in North Macedonia.

There are 15 or 55.55% European species of 27 known in North Macedonia; northern European is 6 or 37.5% of 16 known in North Macedonia; Central European is 16 or 47.05% of 34 known in North Macedonia; South European is 3 or 20% of 15 known in North Macedonia; the Mediterranean are 4 or 44.44% of 9 known species in North Macedonia; species of narrow range and disjunctive distribution (endemic and relict) has 3 or 33.33% of 9 known species in North Macedonia and 3 species in Sharr Mountains are with incomplete range (DD) or 42.86% of 7 known species in North Macedonia (Table 3.).

Table 3. Prevalence of hoverflies in Sharr Mountains by type of distribution expressed in number of species and in %

	W	E	NE	CE	SE	M	D	DD
Syrphidae Nº / %	80 or 61,54%	15 or 11,54%	6 or 4,61%	16 or 12,31%	3 or 2,31%	4 or 3,07%	3 or 2,31%	3 or 2,31%

SYRPHIDAE	**North Macedonia**	**Sharr Mountains**
WIDESPREAD	145	80
EUROPEAN SPECIES	27	15
NORTH EUROPEAN	16	6
CENTRAL EUROPEAN	34	16
SOUTH EUROPEAN	15	3
MEDITERRANEAN	9	4
DISJUNCTIVE DISTRIBUTION (ENDEMIC AND RELICT)	9	3
NOT ENOUGH DATA	7	3
TOTAL	262	130



Graph 3. Prevalence of hoverflies in Macedonia / Sharr Mountains by type of distribution of species

Widespread species in Sharr Mountains (W)

Here we include species that have a wider distribution than the European one. This includes equivalent species, adapted to different biomes, at different latitudes and longitudes, as well as at different altitudes. It has been noted that the most numerous species are Palearctic in distribution (P = 38 species); followed by types of Holarctic distribution (H = 20); species distributed in Europe and Asia Minor (EAM = 10); species distributed in Europe, Siberia and the Far East (ESFI = 5); species distributed in Europe, Siberia, Asia Minor, Africa, Aphrotropics, the Orient and the Nearctic (E S AM Af Aft Or N = 4); cosmopolitan species (C = 3).

PALEARCTIC SPECIES (P = 38)

***Ceriana conopsoides* (Linnaeus, 1758)**
***Cheilosia albitarsis* (Meigen,1822) sensu Doczkal, 2000**
***Cheilosia canicularis* (Panzer, 1801)**
***Cheilosia mutabilis* (Fallen, 1817)**
***Cheilosia scutellata* (Fallen, 1817)**
***Cheilosia soror* (Zetterstedt, 1843)**
***Chrysotoxum bicinctum* (Linnaeus, 1758)**
***Chrysotoxum cautum* (Harris, 1776)**
***Chrysotoxum fasciolatum* (de Geer, 1776)**
***Chrysotoxum festivum* (Linnaeus, 1758)**
***Chrysotoxum vernale* Loew, 1841**
***Dasysyrphus albostriatus* (Fallen, 1817)**
***Dasysyrphus pinastri* (De Geer, 1776) sensu Doczkal (1996a)**
***Dasysyrphus tricinctus* (Fallen, 1817)**
***Epistrophe diaphana* (Zetterstedt, 1843)**
***Episyrphus balteatus* (de Geer, 1776)**
***Eristalinus sepulchralis* Linnaeus, 1758)**
***Eristalis interrupta* (Poda, 1761)**
***Eristalis pertinax* (Scopoli, 1763)**
***Eristalis similis* (Fallen, 1817)**
***Eumerus amoenus* Loew, 1848**
***Eupeodes corollae* (Fabricius, 1794)**
***Melanostoma scalare* (Fabricius, 1794)**
***Meliscaeva auricollis* (Meigen, 1822)**
***Myathropa florea* (Linnaeus, 1758)**
***Neoascia podagrica* (Fabricius, 1775)**
***Orthonevra nobilis* (Fallen, 1817)**
***Paragus pecchiolii* Rondani, 1857**
***Parasyrphus punctulatus* (Verrall, 1873)**
***Pipizella divicoi* (Goeldlin, 1974)**
***Platycheirus ambiguus* (Fallen, 1817)**
***Scaeva dignota* (Rondani, 1857)**
***Scaeva selenitica* (Meigen, 1822)**
***Sphegina clunipes* (Fallen, 1816)**
***Volucella inanis* (Linnaeus, 1758)**
***Volucella pellucens* (Linnaeus, 1758)**
***Xanthandrus comtus* (Harris, 1776)**
***Xanthogramma pedissequum* (Harris, 1780)**

HOLARCTIC SPECIES (H = 20)

***Chrysogaster solstitialis* (Fallen, 1817)**
***Dasysyrphus venustus* (Meigen, 1822)**
***Didea fasciata* Macquart, 1834**
***Epistrophe nitidicollis* (Meigen, 1822)**
***Eristalis arbustorum* (Linnaeus, 1758)**
***Eupeodes lapponicus* (Zetterstedt, 1838)**
***Eupeodes latifasciatus* (Macquart, 1829)**
***Eupeodes luniger* (Meigen, 1822)**
***Melanostoma mellinum* (Linnaeus, 1758)**
***Meliscaeva cinctella* (Zetterstedt, 1843)**
***Paragus haemorrhous* Meigen, 1822**
***Platycheirus albimanus* (Fabricius, 1781)**
***Platycheirus manicatus* (Meigen, 1822)**
***Scaeva pyrastri* (Linnaeus, 1758)**
***Syrphus ribesii* (Linnaeus, 1758)**
***Syrphus torvus* Osten-Sacken, 1875**
***Syrphus vitripennis* Meigen, 1822**
***Volucella bombylans* (Linnaeus, 1758)**
***Xylota segnis* (Linnaeus, 1758)**
***Merodon equestris* (Fabricius, 1794)**

SPECIES DISTRIBUTED IN EUROPE AND ASIA MINOR (EAM = 10)

***Brachypalpoides letus* (Meigen, 1822**
***Callicera fagesii* Guerin-Meneville, 1844**
***Chrysotoxum elegans* Loew, 1841**
***Epistrophe eligans* (Harris, 1780)**
***Eristalis jugorum* Egger, 1858**
***Fagisyrphus cinctus* (Fallen, 1817)**
***Melanogaster nuda* (Macquart, 1829)**
***Merodon loewi* van der Goot, 1964**
***Pipizella annulata* (Macquart, 1829)**
***Pipizella maculipennis* (Meigen, 1822)**

SPECIES DISTRIBUTED IN EUROPE, SIBERIA AND FAR EAST (ESFI = 5)

***Cheilosia gigantea* (Zetterstedt, 1838)**
***Cheilosia impressa* Loew, 1840**
***Helophilus trivittatus* (Fabricius, 1805)**
***Platycheirus immaculatus* (Ohara, 1980)**
***Xylota sylvarum* (Linnaeus, 1758)**

SPECIES DISTRIBUTED IN EUROPE, SIBERIA, ASIA MINOR, AFRICA, AFROTROPICS AND NEARCTIC (E S AM Af Aft N = 4)

***Caliprobola speciosa* (Rossi, 1790)**
***Eristalis lineata* (Harris, 1776)**
***Heringia latitarsis* (Egger, 1865)**
***Platycheirus scutatus* (Meigen, 1822)**

COSMOPOLITAN SPECIES (K =3)

***Eristalis tenax* (Linnaeus, 1758)**
***Sphaerophoria scripta* (Linnaeus, 1758)**
***Syritta pipiens* (Linnaeus, 1758)**

European species distributed in Sharr Mountains

In Macedonia, 27 species belonging to European species have been identified. They are found in all parts of Europe but may sporadically are present in other areas outside Europe. On Sharr Mountains are registered 15 such species.

EUROPEAN SPECIES DISTRIBUTED ON SHARR MOUNTAINS (E = 15)

***Baccha elongata* (Fabricius, 1775)**
***Cheilosia barbata* Loew, 1857**
***Cheilosia illustrata* (Harris, 1776)**
***Cheilosia laticornis* Rondani, 1857**
***Cheilosia nigripes* (Meigen, 1822)**
***Cheilosia proxima* (Zetterstedt, 1843)**
***Cheilosia urbana* (Meigen, 1822)**
***Cheilosia variabilis* (Panzer, 1798)**
***Cheilosia vicina* (Zetterstedt, 1849**
***Cheilosia vulpina* (Meigen, 1822**
***Helophilus pendulus* (Linnaeus, 1758)**
***Myolepta dubia* (Fabricius, 1805)**
***Pipizella viduata* (Linnaeus, 1758)**
***Neoascia annexa* (Muller, 1776)**
***Neoascia meticulosa* (Scopoli, 1763)**

Northern European species distributed in Sharr Mountains

It was stated that there are 16 northern European species in Macedonia, 6 of which are registered for Sharr Mountain. These are species that are found almost all over Europe (except the southern parts) and in Siberia. It is known that these species occupied the southern borders of the area during the glacial period, but since the last ice age they have retreated to the north and today we find them in refugial areas on high mountains. There are two explanations for the presence of species in Balkan high mountains, i.e., twice the genesis.

- group of species of arcto-tertiary origin, formed in Europe at the end of the Quaternary.

- group of new taxa, which were formed during the ice age, protected in refugial parts of high mountains in Europe, and which, by retreating to the north during the interglacial period, remained on high mountains in the south (Vujić. 1996).

NORTHERN EUROPEAN SPECIES DISTRIBUTED IN SHARR MOUNTAINS (NE = 6)

***Dasysyrphus postclaviger* (Stys et Moucha, 1962)**
***Neoascia obliqua* Coe, 1940**
***Cheilosia antiqua* (Meigen, 1822)**
***Cheilosia frontalis* Loew, 1857**
***Cheilosia vernalis* (Fallen, 1817)**
***Volucella inflata* (Fabricius, 1794)**

Central European species distributed in Sharr Mountains (CE)

Here we include 17 species in Macedonia, of which 16 have been confirmed for the Sharr Mountains. These species belong to Central European species with their distribution center and are rarely found outside these borders. These species can be divided into two groups:

- Central European species, which include high mountain taxa with centers of distribution in high mountains (the Alps, Dinarides, Pyrenees, Carpathians, Caucasus, Cantabrian Mountains).

- Central European taxa, which are not related to high mountain habitats.

Today's distribution of both groups of Central European species has a similar history of origin. During glaciation, these species occurred wider and southern distribution. Climate changes that have taken place throughout geological history, that is, global warming, have caused them to retreat to the north of Europe within the boundaries of their sources. With re-cooling, the species spread south again. Interglacial periods were important for changes that occurred in these species in terms of accelerated speciation. This is explained by the fact that part of the populations of these species remained isolated in refugial areas, which is an important condition for the emergence of new species.

Vujić (1996) in his work on Balkan species of Cheilosia gives a reasonable explanation of the high degree of diversity of this genus of hoverflies in high Balkan Mountains, which contributes to the enrichment of European fauna.

Central European species are related to habitats of mesophilic deciduous forests, although those species that are not related to high mountain biomes can be found in biomes of southern European deciduous forests as well as in coniferous forests of boreal type (Vujić, 1996).

CENTRAL EUROPEAN SPECIES DISTRIBUTED IN SHARR MOUNTAINS (CE = 16)

***Chrysotoxum lessonae* Giglio Tos, 1890**
***Chrysotoxum octomaculatum* Curtis, 1837**
***Cheilosia aerea* Dufour, 1848**
***Cheilosia albipila* (Meigen, 1838)**
***Cheilosia bracusi* Vujić et Claussen, 1994**
***Cheilosia fasciata* Schiner et Egger, 1853**
***Cheilosia herculana* Bradescu, 1982**
***Cheilosia himantopa* (Panzer, 1798)**
***Cheilosia orthotricha* Vujic et Claussen, 1994**
***Cheilosia pascuorum* Becker, 1894**
***Cheilosia ranunculi* Doczkal, 2000**
***Eumerus olivaceus* Loew, 1848**
***Melangyna labiatarum* (Verrall, 1901)**
***Merodon nigritarsis* Rondani, 1845**
***Syrphus nitidifrons* Becker, 1921**
***Xylotaxanthocnema* Collin, 1939**

Southern European species distributed in Sharr Mountains

Southern European species have their center of distribution in southern Europe, but in a period of alluvium, they also spread to Central Europe. Species of this type of distribution inhabit the biomes of sub-Mediterranean forests as the most suitable habitats for their survival, but they can also be found in

different types of deciduous forests in continental areas (Vujić & Šimić, 1994). In Macedonia and Sharr Mountains, 3 species belonging to the southern European type of distribution have been recorded.

SOUTHEUROPEAN SPECIES DISTRIBUTED IN SHARR MOUNTAINS (SE = 3)

***Chrysotoxum cisalpinum* Rondani, 1845** ***Orthonevra montana* Vujić, 1999**
***Eumerus tuberculatus* Rondani, 1857**

Mediterranean species distributed in Sharr Mountains

Our research has shown that 4 species of Macedonian hoverflies belong to the Mediterranean type of distribution and are registrated on Sharr Mountains. These species, in addition to areas around the Mediterranean, can be found in some parts of southern Europe, Asia Minor, and beyond.

MEDITERRANEAN SPECIES DISTRIBUTED IN SHARR MOUNTAINS (M = 4)

***Chrysogaster basalis* Loew, 1857** ***Merodon clavipes* (Fabricius, 1794)**
***Merodon aberrans* Egger, 1860** ***Volucella zonaria* (Poda, 1761)**

Species of disjunctive distribution (endemic and relict) in Sharr Mountains (D = 3)

The specific composition of hoverflies fauna in Macedonia is conditioned by specific living conditions (influence of the Mediterranean and continental climate, existence of high mountains and refugial valleys), which led to the appearance of rare, endemic, relict, and endangered species. These include taxa whose distribution is limited to certain areas of the European continent. The type of disjunctive distribution in Macedonia belongs to 9 species of which on Sharr Mountains are registered 3 taxa:

1. ***Cheilosia melanura* Becker, 1894 ssp. *rubra* Vujic, 1996** – This subspecies is endemic to southern Dinars and is also found on Sharr Mountains and Verno at higher altitudes (Vujić, 1996: 98). In Macedonia, it is registered at four other new localities: Mavrovi Anovi, Debar, Kajmakcalan, and Pelister.
2. ***Merodon ruficornis* Meigen, 1822** – Very important European endemic species with limited distribution in France; in the Carpathians in Romania and on Balkan Peninsula in Croatia, Bosnia and Herzegovina, Montenegro, Serbia, Macedonia, and Greece (Vujić et al., 1998: 35). In Macedonia, this species is registered at several localities.
3. ***Sphaegina sublatifrons* Vujic, 1990** – Endemic with limited range in Slovenia and Macedonia where species is registered in only one locality Mavrovi Anovi.

Species for which their distribution is with deficient data (DD)

In Macedonia, 3 taxa have been identified: ***Platycheirus meridimontanus* Nielsen, 2004 *Platycheirus peltatus* (Meigen, 1822),** and ***Neoascia unifasciata* (Strobl, 1898)**, about which there is not enough data on distribution to determine their grouping. These are usually taxa described in recent times, or their nomenclature and taxonomic status are still unresolved. There is not enough data on the distribution of these taxa, because there are not enough registered localities.

Conclusion

The review is a result of comprehensive research on specific flies in the Sharr Mountains. The list of species on Sharr Mountains is based on reviewed collections of Macedonian Museum of Natural History - Skopje (**SKO**), Department of Biology and Ecology - Novi Sad (**IBNS**), the revival of all literary data discussed on hoverflies from the territory of Sharr Mountains, as well as our research. The family hoverflies (Diptera: Syrphidae) on Sharr Mountains is registered with 130 species, belonging to 32

genera, which is 49,61% of the total number of known species in North Macedonia (262), Krpač (2006). This shows that Sharr Mountain is the source of biodiversity in Europe.
Analysis of nutrition of Syrphidae larvae shows that they feed differently. Some larvae are zoophagous, some are phytophagous and mycophagous, and some are saprophagous, so-called "cleaners".
We found that the most numerous are zoophagous (predatory) hoverflies larvae. On Sharr Mountains they are represented with 59 species, i.e., 64.13% of the total number of 92 in North Macedonia.
Somewhat less are phytophagous larvae present with 43 species, i.e., 37.84% of total number of 96 species in North Macedonia.

Saprophague larvae are present with 28 species, i.e., 21.53% of a total number of 74 species in North Macedonia.
Zoogeographic analysis of hoverflies fauna on Sharr Mountains shows that these include equivalent species, adapted to different biomes, at different latitudes and longitudes, as well as at different altitudes. It has been noted that the most numerous species are Palearctic in distribution (P = 38 species); followed by types of Holarctic distribution (H = 20); species distributed in Europe and Asia Minor (EAM = 10); species distributed in Europe, Siberia and the Far East (ESFI = 5); species distributed in Europe, Siberia, Asia Minor, Africa, Aphrotropics, the Orient and the Nearctic (E S AM Af Aft Or N = 3); cosmopolitan species (C = 3). In addition to the above widespread (80) species on Sharr Mountains, we registered 15 species which are found in all parts of Europe; 6 species which are found almost all over Europe (except southern parts) and in Siberia; Central European species are 16 which have been confirmed for Sharr Mountains; Southern European species on Sharr Mountains are 3; we registered 4 Mediterranean species on Sharr Mountains; species of disjunctive distribution (endemic and relict) are 3 on Sharr Mountains and 3 species for which their distribution is with insufficient data.

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