Acta entomologica serbica, 2018, 23(1): 51-77

UDC 595.792(497.11)"2012/2017"
DOI: 10.5281/zenodo.1477931

CHALCIDOIDEA SPECIES (INSECTA: HYMENOPTERA) ON THE WOODY VINE *CAMPSIS RADICANS* (L.) SEEM. EX BUREAU

LJUBODRAG MIHAJLOVIĆ

University of Belgrade, Faculty of Forestry, Kneza Višeslava 1, 1 1030 Belgrade, Serbia
E-mail: mljuba@Eunet.rs

Abstract

The woody vine *Campsis radicans* has extrafloral nectaries on the sepal, pedicel and green fruits. Its nectar attracts abundant Hymenoptera and especially representatives of the Chalcidoidea superfamily. During a six-year study (2012-2017) in the period from July to mid-October, 2117, specimens of Chalcidoidea from 13 families were collected. A total of 116 species were determined, of which 63 were new species to the Serbian fauna, and 11 to the fauna of the Balkan Peninsula. *Campsis radicans* can be considered as a "bait plant" that attracts many groups of Hymenoptera, which is very important for the study of their fauna, and in particular, for almost all the families of the Chalcidoidea superfamily. *Campsis radicans* is also significant since its extrafloral nectar is food to many Chalcidoidea species in periods when no other food is available. Given that almost all of the identified Chalcidoidea species are natural enemies of other insects (most commonly of phytophagous insects), *C. radicans* indirectly provides a natural balance in different terrestrial ecosystems.

KEY WORDS: *Campsis radicans*, extrafloral nectar, Chalcidoidea, fauna, Serbia

Introduction

Tecoma − *Campsis radicans* (Lamiales, Bignoniaceae) originates from the southeastern parts of North America (from Texas to Florida), and to the north, up to Missouri, Pennsylvania and New Jersey, where it grows in moist forests and along river banks. It was introduced to Europe at the beginning of the 17th century, first to the Azores in Spain, then to the whole Mediterranean area and other parts of Europe. Today, it is present in all continents. Tecoma is a deciduous, fast-growing woody vine, which reaches a height of up to 15 m, attaching itself to surfaces with aerial roots. It is not highly demanding on the soil, and it tolerates low temperatures down to -20°C. It is also quite tolerant to urban conditions. Due to its fairly branched-out root system, it is used on terrains that are susceptible to erosion. Its leaves are compound, opposite, with 7-11

leaf blades, up to 20 cm long. Tecoma flowers are very attractive, orange to red in color, and 6-9 cm long. They are shaped like a trumpet, with 5 petals at the top. They form a blossom with 4-11 flowers at the top of the current year's shoots. The plant flowers throughout the summer, from June to September. The fruit is a two-piece, solid capsule, with a round cross section, 5-15 cm in length and up to 3 cm in diameter. It is pea-like, green, and turns brown and opens up when ripe (in October-November) at the end of autumn and during winter. The capsule is full of small seeds with two transparent side leaves that are easily spread by the wind (Fig. 1A, 1B, 1C, 1D).

Tecoma is a melliferous plant, with numerous nectaries at the base of its flowers excreting a lot of nectar that attracts pollinators. Its main pollinators in the country of origin are hummingbirds (Colibri), bumblebees and bees. However, due to the tubular shape and length of the flower, pollinators often fail to reach the nectar between the stamen and pistil. This is why they find an easier way to reach the nectar by biting through a small opening at the base of the corolla, leaving the flower unpollinated. In the course of its evolution, Tecoma "solved" this problem in the following way. In addition to the floral nectaries at the base of the flower, whose secretion attracts pollinators, there are also so-called extrafloral nectaries on the pedicel, sepal and green fruits of this plant (Keeler, 1980; Edge, 2010). Their secretion is of a different chemical composition and does not attract pollinators, but rather the so-called stinging insects, i.e. Hymenoptera, equipped with a sting apparatus, Hymenoptera aculeata (Vespidae, Formicidae, Sphecidae, etc.).

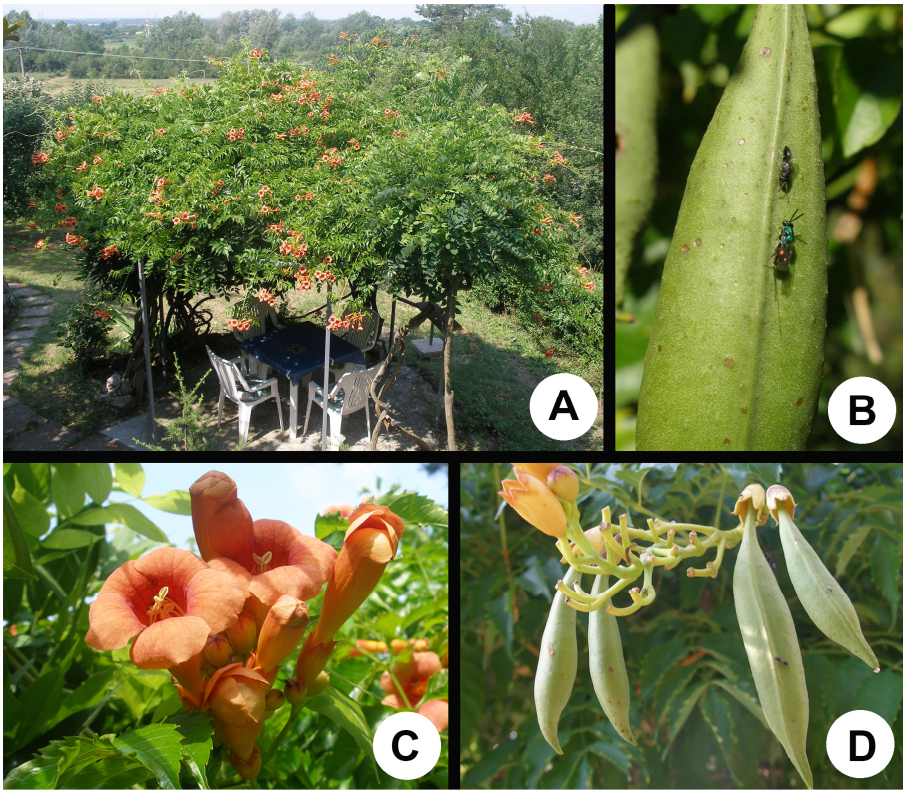

Figure 1. *Campsis radicans* stem (L.) Seem. ex Bureau from which Hymenoptera were collected (A), Chalcidoidea imagoes feeding on nectar from extrafloral nectaries on green fruits (B), flowers (C) and pedicel, sepal and green fruits (D).

These insects come to the aboveground parts, where they feed themselves and fiercely defend the food source. If a pollinator comes and attempts to make a hole at the base of a flower, they will chase it away, so that it must go through the flower to collect nectar, thereby pollinating the flower. The secretion of extrafloral nectaries also attracts other insects, especially the Hymenoptera parasitica, and in particular representatives of the Chalcidoidea superfamily.

A detailed literature review revealed that there has only been one paper from Romania (Popesku, 2012) dealing with this topic so far. The author states that Chalcidoidea imagoes belonging to the families Chalcididae, Torymidae, Eurytomidae, Leucospidae, Pteromalidae, Perilampidae, Ormyridae, Eupelmidae, Eulophidae and Encyrtidae were detected at two locations in eastern Romania. It was established that, apart from the family Encyrtidae, all other families were for the first time associated with *C. radicans*. Unfortunately, the paper does not mention the identified species.

Materials and Methods

The research was conducted in the period from 2012 to 2017, from the beginning of July to the beginning of October. The insect imagoes were collected at one location (the village of Draževac near Obrenovac) from a single tree, which was about 50 years old. The insect imagoes were collected around a shade canopy (Fig. 1A) by the sweeping method. Twenty sweeps were performed every two hours between 12 and 16 h (a total of three times) daily. The collected imagoes were killed in an aspirator with vinegar ether and packaged in glass tubes. Later, they were prepared on entomological cards and determined. A total of 2117 specimens were collected. The complete collected material was placed in special entomological boxes and stored in the Museum of the Chair of Forest Protection of the Faculty of Forestry in Belgrade.

Results

The entomofauna of Tecoma has not been explored in detail in Europe. Only some insect pollinators are known, including the honeybee *Apis mellifera* (L.) and several solitary bee and bumblebee species. There are very few phytophagous insects that are trophically linked to Tecoma. Based on our own research, to date we have identified two very polyphagous species − the European fruit lecanium *Parthenolecanium corni* (Bouche) (Hemiptera: Coccidae) and the citrus flatid planthopper *Metcalfa pruinosa* (Say) (Hemiptera: Flatidae). If there are no phytophagous insects on Tecoma, it is logical to assume that parasitoids cannot be expected. However, during the second half of the summer of 2012, the presence of numerous imagoes of Hymenoptera insects was observed on the Tecoma tree, especially at the flower bases and on flower stems and green fruits. Representatives of the Chalcidoidea superfamily were dominant and other families of the Apocrita aculeate group whose representatives were present were: Vespidae, Formicidae, Sphecidae, Pompilidae and Chrysididae, and from Apocrita parasitica: Braconidae, Cynipidae, Evaniidae, Gasteruptiidae, Ichneumonidae, Megaspilidae, Proctotrupidae and Scelionidae. The largest number of specimens belonged to the families: Formicidae, Vespidae, Chrysididae and Sphecidae. All the above insects were attracted to the nectar from extrafloral nectaries.

During the six-year research into the species associated with the plant *C. radicans* at only one location and on a single old tree, we collected a total of 2117 specimens of species from the Chalcidoidea superfamily belonging to the families Aphelinidae, Chalcididae, Encyrtidae, Eulophidae, Eupelmidae, Eurytomidae, Leucospidae, Mymaridae, Ormyridae, Perilampidae, Pteromalidae, Torymidae and

Trichogrammatidae. The families and species are listed in alphabetical order. The data on distribution and hosts are given after Noyes, (2017).

Family Aphelinidae (1 specimen)

Aphelinus flaviventris Kurdjumov, 1913: 01.09.2004. 1 ♀ (1 specimen).

Distribution: Europe, Central Asia, Transcaucasia and North America. Known in Serbia (Bouček, 1977).

Primary host: Hemiptera (Aphididae).

Family Chalcididae (978 specimens)

Antrocephalus hypsopygiae Masi, 1928: 24.08–23.09.2012. 127 ♀♂; 25.08-16.09.2013. 7 ♀♂; 23.08-04.09.2015. 22 ♀♂; 03.07.2017. 1 ♂; 04.07.2017. 3 ♀♂; 05.07.2017. 7 ♀♂; 18.08.2017. 4 ♀♂; 19.08.2017. 3 ♀♂; 22.08.2017. 2 ♀♀; 23.08.2017. 4 ♂♂; 24.08.2017. 3 ♀♂; 25.08.2017. 1 ♂; 26.08.2017. 19 ♀♂; 27.08.2017. 28 ♀♂; 28.08.2017. 54 ♀♂; 29.08. 2017. 42 ♀♂; 01.09.2017. 45 ♀♂; 02.09.2017. 56 ♀♂; 05.09.2017. 25 ♀♂; 06.09.2017. 17 ♀♂; 08.09.2017. 16 ♀♂ (486 specimens).

Distribution: Europe (Croatia, Spain, Cyprus, France), North Africa (Morocco), Caucasus and Central Asia. New for Serbia.

Primary host: Lepidoptera, Pyralidae (*Hypsopygia costalis* caterpillars).

Belaspidia obscura Masi, 1916: 24-25.08.2012. 5 ♀♂; 23.08-01.09.09. 2015. 3 ♂♂ (8 specimens).

Distribution: Europe, North Africa, Turkey, Russia (European part), Transcaucasia and Central Asia. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Coleophoridae and Psychidae).

Brachymeria femorata (Panzer, 1801): 16.09.2013. 1 ♂ (1 specimen).

Distribution: Palearctic. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Arctiidae, Lasiocampidae, Noctuidae, Nymphalidae, Pieridae and Yponomeutidae) and Coleoptera (Curculionidae).

Parasitoid host: Diptera (Tachinidae).

Brachymeria inermis (Fon.): 24.08.2012. 1 ♂; 25.08.2013. 2 ♀♂; 15.09.2013. 1 ♂; 16.09.2013. 5 ♀♂; 23.08.2015. 1 ♂; 30.08.2015. 2 ♀♂; 31.08.2015. 2 ♀♂; 02-04.09.2015. 1 ♀; 15.09.2015. 1 ♀; 18.08.2017. 1 ♂; 19.08.2017. 1 ♂; 26.08.2017. 6 ♀♂; 27.08.2017. 5 ♀♂; 28.08.2017. 3 ♀♂; 29.08.2017. 2 ♂♂; 01.09.2017. 1 ♀; 02.09.2017. 3 ♀♂; 06.09.2017. 7 ♀♂; 08.09.2017. 1 ♀; 04.10.2017. 1 ♂, 1 ♀ (48 specimens).

Distribution: Palearctic. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (*Cassida* spp.) and Lepidoptera (Coleophoridae, Geometridae, Tortricidae and Nymphalidae).

Brachymeria minuta (L.): 25.08.2013. 1 ♀; 18.08.2017. 1 ♂; 26.08.2017. 1 ♂; 27.08.2017. 2 ♂♂; 28.08.2017. 1 ♀, 1 ♂; 29.08.2017. 1 ♂, 1 ♀; 01.09.2017. 3 ♂♂; 02.09.2017. 1 ♀, 1 ♂; 05.09. 2017. 1 ♂; 10.09.2017. 1 ♂ (16 specimens).

Distribution: Common Palearctic species, now distributed also in many parts of the world. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Arctiidae, Gelechiidae, Hesperiidae, Lasiocampidae, Lymantriidae, Pieridae, Tortricidae and Yponomeutidae), Hymenoptera (Cimbicidae and Diprionidae) and Diptera (Calliphoridae and Sarcophagidae).

Parasitoid host: Diptera (Sarcophagidae and Tachinidae).

Brachymeria moerens (Ruschka, 1922): 15.09.2013. 3 ♀♂; 29.08.2017. 1 ♀; 01.09.2017. 1 ♀ (5 specimens).

Distribution: Europe, Asia Minor above Transcaucasia. New for Serbia.

Primary host: Orthoptera, Tettigoniidae (*Barbitistis fischeri* Yersin).

Brachymeria rugulosa (Förster 1859): 24.08.2013. 5 ♀♂; 25.08.2012. 9 ♀♂; 27.08.2012. 9 ♀♂; 25.08.2013. 3 ♀♂; 15.09.2013. 12 ♀♂; 16.09.2013. 7 ♀♂; 24.09.2013. 1 ♀; 05.08.2015. 1 ♂; 19.08.2015. 1 ♂; 23.08.2015. 1 ♂, 1 ♀; 24.08.2015. 6 ♀♂; 29.08.2015. 1 ♂, 1 ♀; 30.08.2015 1 ♀; 31.08.2015. 5 ♀♂; 02-04.09.2015. 1 ♂, 1 ♀; 18.08.2017. 1 ♂; 24.08.2017. 1 ♂; 25.08.2017. 1 ♂; 26.08.2017. 3 ♂♂; 27.08.2017. 5 ♂♂, 2 ♀♀; 28.08.2017. 3 ♀♀; 29.08.2017. 2 ♂♂, 3 ♀♀; 01.09.2017. 3 ♀♀, 1 ♂; 02.09.2017. 3 ♀♀, 5 ♂♂; 06,09.2017. 1 ♀; 08.09.2017. 1 ♀ (105 specimens).

Distribution: Europe, Asia Minor, Turkmenistan and Iran. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Oecophoridae, Tortricidae and Pyralidae) and Hymenoptera (Cynipidae).

Brachymeria secundaria (Ruschka, 1922): 10.09.2013. 1 ♂; 15.09.2013. 1 ♀; 16.09.2013. 1 ♂, 1 ♀; 02-05.09.2015. 1 ♀; 03.07.2017. 2 ♂♂; 04.07.2017. 2 ♂♂; 05.07.2017. 3 ♀♂; 06.07.2017. 1 ♂; 17.08.2017. 1 ♂; 22.08.2017. 2 ♂♂; 26.08.2017. 7 ♀♂; 27.08.2017. 4 ♀♂; 28.08.2017. 14 ♀♂; 29.08.2017. 5 ♀♂; 01.09.2017. 7 ♀♂; 02.09.2017. 12 ♀♂; 06.09.2017. 6 ♀♂; 10.09.2017. 5 ♀♂; 04.10.2017. 1 ♀ (77 specimens).

Distribution: Palearctic. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Geometridae, Lymantriidae, Noctuidae, Notodontidae, Nymphalidae, Pieridae, Tortricidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Braconidae and Ichneumonidae)

Brachymeria tibialis (Walker 1834): 24.08-23.09.2012. 18 ♀♂; 24.08-16.09.2013. 16 ♀♂; 23.08-31.08.2015. 5 ♀♂ (39 specimens).

Distribution: Holarctic. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Cecidomyiidae and Tachinidae), Hymenoptera (Chalcididae, Cynipidae and Diprionidae) and Lepidoptera (Arctiidae, Geometridae, Hesperiidae, Lasiocampidae, Lymantriidae, Noctuidae, Notodontidae, Nymphalidae, Oecophoridae, Papilionidae, Pieridae, Pyralidae, Saturniidae, Tortricidae and Zygaenidae).

Parasitoid host: Diptera (Tachinidae) and Hymenoptera (Braconidae, Ichneumonidae and Chalcididae).

Brachymeria vitripennis (Förster, 1859): 24.08.2012. 1 ♀; 25.08.2012. 9 ♀♂; 26.08.2012. 1 ♂, 1 ♀; 27.08.2012. 13 ♀♂; 15.08.2013. 1 ♀; 24.08.2013. 1 ♂ 1 ♀; 25.08.2013. 1 ♂, 1 ♀; 30.08.2013. 1 ♂; 15.09.2013. 19 ♀♂; 16.09.2013. 8 ♀♂; 27.09.2014. 1 ♂; 19.08.2015. 1 ♂; 22.08.2015. 1 ♂; 23.08.2015. 2 ♀♀; 24.08.2015. 3 ♀♂; 27.08.2015. 1 ♀; 28.08.2015. 1 ♂; 29.08.2015. 3 ♀♂; 30.08.2015. 5 ♀♂; 31.08.2015. 14 ♀♂; 01.09.2015. 1 ♂; 02-04.09.2015. 2 ♀♂; 05.07.2017. 1 ♂; 17.08.2017. 1 ♂; 25.08.2017. 1 ♂; 26.08.2017. 1 ♂; 28.08.2017. 4 ♀♂; 02.09.2017. 6 ♀♂; 06.09.2017. 2 ♂♂; 10.09.2017. 2 ♂ (110 specimens).

Distribution*:* Europe and Iran. New for Serbia.

Primary host: Coleoptera (Chrysomelidae, *Cassida* spp. and Rhynchitidae, *Byctiscus* spp.).

Dirhinus hesperidum (Rossi, 1790): 24-27.08.2012. 7 ♀♂; 15-16.09.2013. 1 ♂, 1 ♀; 19-23.08.2015. 1 ♂, 1 ♀; 05.07.2017. 1 ♂ (12 specimens).

Distribution: Europe, North Africa, Asia Minor, Iran, Korea and Japan. New for Serbia.

Primary host: Diptera (Muscidae and Sarcophagidae).

Hockeria unicolor Walker, 1834: 24-27.08.2012. 9 ♀♂; 16.09.2013. 1 ♀; 30.08-04.09.2015. 1 ♂, 1 ♀; 03.07.2017. 1 ♂; 05.07.2017. 1 ♂; 17.08.2017. 1 ♂; 18.08.2017. 1 ♂, 1 ♀; 23.08.2017. 1 ♀; 25.08.2017. 1 ♂; 26.08.2017. 1 ♂; 27.08.2017. 5 ♂♂; 28.08.2017. 2 ♂♂; 29.08.2017. 6 ♂♂; 01.09.2017. 2 ♂♂; 02.09.2017. 1 ♂; 08.09.2017. 1 ♂; 10.09.2017. 1 ♂ (38 specimens).

Distribution: Europe Central Asia, Siberia and Asia Minor. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Gelechiidae, Geometridae, Gracillariidae, Momphidae, Noctuidae, Psychidae, Tortricidae, Yponomeutidae and Zygaenidae).

Neohybothorax hetera (Walker, 1834): 24.08.2015. 1 ♀ (1 specimen).

Distribution: Europe and Iran. New for Serbia.

Primary host: Neuroptera (Ascalaphidae, *Libelloides coccajus* **(**Den. & Schiff.).

Proconura nigripes (Fonscolombe, 1832): 24-27.08.2012. 23 ♀♂; 15-16.09.2013. 1 ♂, 1 ♀; 04.07.2017. 2 ♀♀; 22.08.2017. 1 ♀; 28.08.2017. 2 ♀♀ (30 specimens).

Distribution: Europe, North Africa, Asia Minor, Central Asia and Transcaucasia. New for Serbia.

Primary host: Lepidoptera (Gelechiidae, Pyralidae and Yponomeutidae).

Psilochalcis subarmata (Förster,1855): 27.08.2012. 1 ♀ (1 specimen).

Distribution: Europe, Central Asia, Iran, India. New for Serbia.

Primary host: not known.

Psilochalcis ligustica (Masi, 1929): 02.09.2017. 1 ♂ (1 specimen).

Distribution: Europe, Central Asia, Iran and India. New for Serbia.

Primary host: not known.

Family Encyrtidae (21 specimens)

Cheiloneurus boldyrevi Trjapitzin & Agekyan, 1978: 28.08.2017. 1 ♀ (1 specimen).

Distribution: Europe, Central Asia, Tadzhikistan, Uzbekistan and Iran. New for Serbia.

Primary host: Diptera (Syrphidae) and Hemiptera (Flatidae, *Metcalfa pruinosa* Say.).

Parasitoid host: Hymenoptera (Dryinidae, *Neodryinus typhlocybae* (Ashm.).

Discodes aeneus (Dalman, 1820): 24.08.2012. 1 ♀; 25.08.2012. 2 ♀♀; 27.08.2012. 1 ♀ (4 specimens).

Distribution: Europe, Asia Minor, Central Asia, Near East Known in Serbia (Bouček, 1977).

Primary host: Hemiptera (Coccidae, Diaspididae, Asterolecanidae and Pseudococcidae).

Parasitoid host: Hymenoptera (Aphelinidae, *Marietta picta*)

Discodes coccophagus (Ratzeburg, 1848): 01.09.2014. 1 ♀. 29.08.2017. 1 ♀ (2 specimens).

Distribution: Europe, Asia Minor, Near East, Transcaucasia, Turkmenistan, Kirgizia, Iran and Central Asia. New for Serbia.

Primary host: Hemiptera (Coccidae).

Parasitoid host: Hymenoptera (Encyrtidae, *Cerapterocerus mirabilis*).

Homalotylus flaminus Dalman 1820: 05.07.2017. 1 ♀; 27.08.2017. 1 ♀; 28.08.2017 1 ♀ (3 specimens).

Distribution: Cosmopolitan. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Coccinellidae) and Hemiptera (Coccidae and Pseudococcidae).

Homalotylus platynaspidis Hoffer, 1963: 04.07.2017. 1 ♀ (1 specimen).

Distribution: Europe and Central Asia. New for Serbia.

Primary host: Coleoptera (Coccinellidae).

Leptomastidea bifasciata (Mayr, 1876): 15.09.2013. 1 ♀ (1 specimen).

Distribution: Palaearctic. Known in Serbia (Hoffer, 1976).

Primary host: Hemiptera (Pseudococcidae).

Leptomastix flava Mercet, 1921: 23.09.2012. 1 ♀; 24.08.2012. 1 ♀ (2 specimens).

Distribution: Palearctic, Afrotropical and USA (probably introduced). New for Serbia.

Primary host: Hemiptera (Pseudococcidae and Coccidae).

Parasitoid host: Hymenoptera (Encyrtidae – *Prochiloneurus bolivari*).

Paratetracnemoidea malenotti (Mercet, 1918): 25.08.2013. 1 ♀ (1 specimen).

Distribution: Europe, Asia Minor, Azerbaijan, Turkmenistan, Sudan, Gambia, PR China and India. New for Serbia.

Primary host: not known.

Trichomasthus albimanus Thomson, 1876: 31.08.2015. 1 ♀ (1 specimen).

Distribution: Europe, Asia Minor, Transcaucasia, Mongolia, Azerbaijan and USA. Known in Serbia (Mitić-Mužina, 1964; Hoffer, 1976).

Primary host: Hemiptera (Coccidae, Asterolecanidae and Eriococcidae).

Zaomma lambinus (Walker, 1838): 31.08.2015. 1 ♀; 23.08.2015. 1 ♀; 01.09.2015. 1 ♀; 03.07.2017. 1 ♀ (5 specimens).

Distribution: Cosmopolitan. Known in Serbia (Graora *et al.*, 1994).

Primary host: Hemiptera (Diaspididae, Eriococcidae, Coccidae and Asterolecanidae).

Parasitoid host: Hymenoptera (Aphelinidae and Encyrtidae).

Family Eulophidae (62 specimens)

Allocerastichus doderi Masi, 1924: 27.08.2012. 1 ♀ (1 specimen).

Distribution: Austria, Czech Republic, Germany, Hungary, Italy, Iceland, Slovakia and Sweden. New for Serbia.

Primary host: Coleoptera (Ciidae).

Closterocerus trifasciatus Westwood, 1833: 26.08.2017. 1 ♀ (1 specimen).

Distribution: Holarctic. Known in Serbia (Graora & Spasić, 2008; Freise *et al.*, 2002).

Primary host: Coleoptera (Buprestidae, Chrysomelidae and Curculionidae), Diptera (Agromyzidae), Hymenoptera (Argidae and Tenthredinidae), Lepidoptera (Coleophoridae, Elastichidae, Eriocraniidae, Gelechiidae, Gracillariidae, Heliozelidae, Incurvariidae, Lyonetiidae, Momphidae, Nepticulidae, Tischeriidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Braconidae, Ichneumonidae and Eulophidae).

Derostenus gemmeus Westwood, 1833: 16.09.2013. 1 ♀; 22.08.2015 1 ♀ (2 specimens).

Distribution: Europe. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Agromyzidae and Cecidomyiidae) and Lepidoptera (Gracillariidae, Heliozelidae, Nepticulidae and Torticidae).

Euderus agrili Bouček, 1963: 22.09.2014. 1 ♀; 25.08.2013. 1 ♀ (2 specimens).

Distribution: Europe, Asia Minor, Tadzhikistan and Kirgizia. New for Serbia.

Primary host: Coleoptera (Buprestidae, *Agrilus* spp.)

Euderus albitarsis Zetterstedt, 1834: 26.08.2017. 1 ♀; 28.08.2017. 1 ♀; 02.09.2017. 1 ♀ (3 specimens).

Distribution: Holarctic. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Cerambycidae and Curculionidae), Diptera (Agromyzidae, Cecidomyiidae), Hemiptera (Diaspididae), Hymenoptera (Cephidae and Cynipidae) and Lepidoptera (Coleophoridae, Cossidae, Lymantriidae, Nepticulidae, Notodontidae, Pterophoridae and Tortricidae).

Melittobia acasta (Walker, 1839): 31.08.2015 1 ♀ (1 specimen).

Distribution: Cosmopolitan. Known in Serbia (Bouček, 1977; Krunić *et al.*,1991).

Primary host: Coleoptera (Buprestidae and Chrysomelidae), Diptera (Calliphoridae, Cecidomyiidae, Muscidae, Tachinidae and Tephritidae), Hymenoptera (Apidae, Chrysididae, Diprionidae, Formicidae, Sphecidae and Vespidae) and Lepidoptera (Lasiocampidae, Limacodidae, Lymantriidae, Noctuidae, Pieridae and Tortricidae).

Parasitoid host: Hymenoptera (Chrysididae, Ichneumonidae, Leucospidae and Torymidae) and Diptera (Tachinidae and Sarcophagidae).

Microlycus heterocerus Thomson 1878: 15.09.2013. 1 ♀ (1 specimen).

Distribution: Czech Republic, France, Germany, Spain, Sweden, England. New for Serbia.

Primary host: not known.

Miotropis unipuncta (Nees, 1834): 04.07.2017. 1 ♀; 26.08.2017. 1 ♀; 08.09.2017. 1 ♀ (3 specimens).

Distribution: Europe, Asia Minor, Mongolia and North Africa. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Coleophoridae and Elachistidae).

Necremnus hungaricus (Erdös 1951): 25.08.2013.1 ♀ (1 specimen).

Distribution: Czech Republic, Slovakia, Hungary and Moldavia. New for Serbia.

Primary host: Lepidoptera (Coleophoridae).

Platyplectrus laeviscuta (Thomson 1878): 27.09.2014. 1 ♀; 30.10.2015. 1 ♀ (2 specimens).

Distribution: Palearctic and Australia. New for Serbia.

Primary host: Lepidoptera (Nepticulidae, *Stigmella ruficapitella*).

Metaplectrus szepligetii (Erdös, 1951): 29.08.2015. 1 ♀; 01.09.2015. 1 ♀ (2 specimens).

Distribution: Hungary. New for Serbia.

Primary host: not known.

Pnigalio xerophilus (Erdös, 1954): 15.09.2013. 1 ♀ (1 specimen).

Distribution: Czech Republic, Slovakia, Bulgaria, Hungary, Sweden and Russia (Primorye Kray and Ulyanovsk Oblast). New for Serbia.

Primary host: Lepidoptera (Gracillariidae, *Phyllonorycter blancardella*).

Sympiesis acalle (Walker, 1848): 27.08.2012. 1 ♀; 27.08.2015. 1 ♀; 04.07.2017. 1 ♀ (3 specimens).

Distribution: Holarctic. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Agromyzidae) and Lepidoptera (Blastobasidae, Elachistidae, Gelechiidae, Glyphipterygidae, Gracillariidae, Lyonetidae, Nepticulidae, Oecophoridae, Tischeriidae and Tortricidae).

Parasitoid host: Hymenoptera (Braconidae and Ichneumonidae).

Sympiesis sericeicornis (Nees, 1834): 15.08.2013. 1 ♂; 15.09.2013. 1 ♂ (2 specimens).

Distribution: Holarctic. Known in Serbia (Bogavac, 1959; Bouček, 1977; Freise *et al.*, 2002; Stojanović & Marković, 2004).

Primary host: Coleoptera (Curculionidae), Hymenoptera (Tenthredinidae) and Lepidoptera (Bucculatricidae, Coleophoridae, Gelechiidae, Gracillariidae, Lymantriidae, Lyonetidae, Momphidae, Nepticulidae, Tischeriidae, Tortricidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Braconidae and Eulophidae).

Elasmus anius Walker, 1846: 31.08.2015. 2 ♀♀ (2 specimens).

Distribution: Croatia, Sweden, and England. New for Serbia.

Primary host: not known.

Elasmus biroi Erdös, 1964: 28.08.2017. 2 ♀♀ (2 specimens).

Distribution: Hungary. New for Serbia.

Primary host: Hymenoptera (Vespidae, *Polistes opinabilis* Kohl.).

Elasmus flabellatus (Fonscolombe, 1832): 25.08.2012. 1 ♀; 27.08.2012. 1 ♀. 01.09.2015. 1 ♀ (3 specimens).

Distribution: Europe and North Africa. Known in Serbia (Vukasović, 1931).

Primary host: Lepidoptera (Gelechiidae, Heliozelidae, Noctuidae, Psychidae, Pyralidae, Tortricidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Braconidae, Bethylidae and Ichneumonidae).

Elasmus platyedrae Ferrière, 1935: 31.08.2015. 3 ♀♀; 02-04.09.2015. 1 ♀; 24.08.2012. 1 ♀; 25.08.2012. 1 ♀; 27.08.2012. 2 ♀♀ (8 specimens).

Distribution: Europe. North Africa, Near East, India and North America. New for Serbia.

Primary host: Lepidoptera (Coccidae, Gelechiidae, Lymantriidae, Momphidae and Pyralidae).

Elasmus rufiventris Ferrière, 1947: 25.08. 2013. 1 ♀ (1 specimen).

Distribution: Europe. New for Serbia.

Primary host: Lepidoptera (Psychidae and Tineidae).

Elasmus steffani Viggiani, 1967: 25.08.2012. 1 ♀; 24.08.2012. 1 ♀; 19.08.2015. 1 ♀; 23.08.2015. 2 ♀♀; 16.09.2013. 1 ♀; 25.08.2013. 1 ♀; 15.09.2013. 4 ♀♀; 25.08.2015. 1 ♀ (12 specimens).

Distribution: Bulgaria, Croatia, France, Greece, Italy, Spain, Syria, Turkey and United Arab Emirates. New for Serbia.

Primary host: Lepidoptera (Crambidae, Tortricidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Braconidae, *Apanteles glomeratus* (L.)).

Elasmus unicolor Rondani, 1877: 28.08.2017. 1 ♀ (1 specimens).

Distribution: Europe and Asia Minor. New for Serbia.

Primary host: Lepidoptera (Coleophoridae, *Coleophora vibicella* (Hubn.) and Pyralidae, *Galleria mellonella* (L.).

Elasmus viridiceps Thomson, 1878: 04.07.2017 1 ♀; 05.07.2017. 3 ♀♀; 18.08.2017. 1 ♀; 29.08.2017. 1 ♀; 01.09.2017. 1 ♀; 02.09.2017.1 ♀ (8 specimens).

Distribution: Palearctic. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Coleophoridae, Gelechiidae, Gracillariidae, Noctuidae and Tortricidae).

Parasitoid host: Hymenoptera (Bethylidae and Pteromalidae).

Family Eupelmidae (172 specimens)

Anastatus bifasciatus (Geoffroy, 1785): 24.08.2012. 1 ♀; 27.08.2012. 1 ♀; 24.08.2013. 1 ♀; 15.09.2013. 1 ♀; 29.08.2015. 1 ♀ (5 specimens).

Distribution: Holarctic. Known in Serbia (Bouček, 1977).

Primary host: Hemiptera (Coreidae, Pentatomidae, Aphididae, Psyllidae and Scutelleridae), Orthoptera (Acrididae and Tettigoniidae) and Lepidoptera (Lasiocampidae, Lymantriidae, Notodontidae, Nymphalidae, Papilionidae, Saturniidae and Sphingidae).

Anastatus catalonicus Bolivar y Pieltain, 1935: 02-04.09.2015. 1 ♀; 27.08.2017. 1 ♀ (2 specimens).

Distribution: Spain, France, Germany, Romania and Canary Islands. New for Serbia.

Primary host: Lepidoptera (Lymantriidae, *Lymantria dispar* L.) and Orthoptera (Mantidae, *Iris oratoria* L.).

Anastatus japonicus Ashmead, 1904: 05.07.2017. 1 ♀; 28.08.2017. 1 ♀; 06.09.2017. 1 ♀ (3 specimens).

Distribution: Holarctic. Known in Serbia (Vasić, 1955; Vasić & Salatić, 1959; Tadić & Binčev, 1959).

Primary host: Hemiptera (Alydidae and Pentatomidae) and Lepidoptera (Lasiocampidae, Lymantriidae, Notodontidae, Papilionidae and Saturniidae).

Calosota aestivalis Curtis, 1836: 24.08.2012. 1 ♂, 1 ♀; 25.08.2012. 1 ♂, 1 ♀; 27.08.2012. 1 ♂; 15.09.2013. 1 ♀; 28.08.2015. 1 ♀; 30.08.2015. 1 ♂, 1 ♀; 31.08.2015. 1 ♀; 01.09.2015. 1 ♂; 02-09.2015. 1 ♂, 1 ♀; 26.08.2017. 1 ♀; 28.08.2017. 1 ♀; 29.08.2017. 1 ♂, 1 ♀; 01.09.2017. 1 ♀ (18 specimens).

Distribution: Europe, North Africa, Asia Minor, Near East and North America. New for Serbia.

Primary host: Coleoptera (Anobiidae, Buprestidae, Cerambycidae, Cleridae and Curculionidae, subfam. Molytinae and Scolytinae) and Hymenoptera (Apidae, *Megachile* spp.).

Calosota vernalis Curtis, 1836: 24.08.2012. 1 ♀; 03.07.2017. 1 ♀; 05.07.2017. 2 ♀♀; 26.08.2017. 3 ♀♀; 27.08.2017. 1 ♀; 28.08.2017. 1 ♀; 02.09.2017. 1 ♀ (10 specimens).

Distribution: Europe and North America – probably introduced. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Buprestidae, Cleridae and Curculionidae, subfam. Molytinae and Scolytinae) and Hymenoptera (Apidae and Sphecidae).

Eupelmus australiensis (Girault, 1913): 06.10.2012. 1 ♀ (1 specimen).

Distribution: Cosmopolitan. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Cecidomyiidae) and Lepidoptera (Noctuidae).

Parasitoid host: Hymenoptera (Eulophidae).

Eupelmus pini Taylor, 1927: 31.08.2015. 1 ♀; 05.07.2017. 1 ♀; 08.09.2017. 1 ♀ (3 specimens).

Distribution: Holarctic. Known in Serbia Marković & Stojanović, 2003).

Primary host: Coleoptera (Buprestidae, Cerambycidae and Curculionidae, subfam. Molytinae and Scolytinae).

Eusandalum merceti (Bolivar y Pieltain, 1926): 24.08.2012. 10 ♀♂; 25.08.2012. 11 ♀♂: 26.08.2012. 1 ♂, 1 ♀; 27.08.2012. 24 ♀♂; 25.08.2013. 2 ♂♂, 1 ♀; 15.09.2013. 1 ♀; 22.08.2015 1 ♀; 24.08.2015. 1 ♀; 30.08.2015. 1 ♂; 31.08.2015. 1 ♀; 02-04.09.2015. 1 ♀; 04.07.2017. 7 ♀♀, 13 ♂♂; 05.07.2017. 3 ♀♀, 9 ♂♂; 17.08.2017. 1 ♂; 18.08.2017. 2 ♀♀, 2 ♂♂; 19.08.2017. 1 ♀; 23.08.2017. 1 ♀; 24.08.2017. 1 ♀; 26.08.2017. 2 ♀♀, 3 ♂♂; 27.08.2017. 5 ♀♀, 2 ♂♂; 28.08.2017. 3 ♀♀, 1 ♂; 29.08.2017. 4 ♀♀, 3 ♂♂; 01.09.2017. 3 ♂♂; 02.09.2017. 1 ♀, 2 ♂♂; 05.09.2017. 2 ♀♀, 2 ♂♂; 06.09.2017. 1 ♀ (130 specimens).

Distribution: Austria, Czech Republic, Slovakia, Spain, Hungary, Canary Islands and Tadzhikistan. New for Serbia.

Primary host: Coleoptera (Buprestidae, *Agrilus* spp. and Curculionidae, subfam. Scolytinae).

Family Eurytomidae (484 specimens)

Aximopsis nodularis (Boheman, 1836): 24.08.2012. 8 ♀♂; 26.08.2012. 8 ♀♂; 27.08.2012. 7 ♀♂; 23.09.2012. 7 ♀♂; 06.10.2012. 2 ♀♀; 15.08.2013. 1 ♀; 18.08.2013. 1 ♀; 21.08.2013. 2 ♂♂, 2 ♀♀; 24.08.2013. 7 ♀♂; 25.08.2013. 17 ♀♂; 26.08.2013. 1 ♀; 15.09.2013. 18 ♀♂; 16.09.2013. 11 ♀♂; 27.09.2014. 6 ♀♂; 28.09.2014. 1 ♂, 2 ♀♀; 19.08.2015. 1 ♂, 2 ♀♀; 20.08.2015. 6 ♀♂; 21.08.2015. 2 ♂♂, 3 ♀♀; 22.08.2015. 1 ♀; 23.08.2015. 1 ♀; 24.08.2015. 2 ♂♂, 2 ♀♀; 25.08.2015. 6 ♀♂; 27.08.2015. 2 ♂♂, 3 ♀♀; 29.08.2015. 1 ♀; 31.08.2015. 1 ♀; 01.09. 2015. 2 ♂♂, 3 ♀♀; 03.07.2017. 8 ♀♂; 04.07.2017. 3 ♀♀; 05.07. 2017. 2 ♀♀; 06.07.2017. 1 ♀; 17.08.2017. 2 ♂♂, 3 ♀♀; 19.08.2017. 12 ♀♂; 22.08.2017. 22 ♀♂; 24.08.2017. 12 ♀♂; 27.08.2017. 17 ♀♂; 28.08.2017. 70 ♀♂; 29.08.2017. 2 ♀♀; 01.09.2017. 4 ♀♀; 02.09.2017, 6 ♀♂; 03.09.2017. 1 ♀; 06.09.2017. 5 ♀♀; 08.09.2017. 1 ♀; 10.09.2017. 9 ♀♂; 04.10.2017. 2 ♀♀ (321 specimens).

Distribution: Europe and Asia Minor. New for Serbia.

Primary host: Hymenoptera (Apidae, Vespidae, Sphecidae and Cynipidae) and Coleoptera (Curculionidae, *Pissodes notatus*).

Parasitoid host: Hymenoptera (Ichneumonidae, *Xylophorus* spp.).

Bruchophagus kelebiana (Erdös, 1957): 05.07.2017. 1 ♀ (1 specimen).

Distribution: Hungary. New for Serbia.

Biology: not known.

Eurytoma afra Boheman, 1836: 01.09.2015. 1 ♀ (1 specimen).

Distribution: Europe and North America. New for Serbia.

Primary host: Coleoptera (Curculionidae, subfam. Scolytinae) and Diptera (Cecidomyiidae).

Eurytoma appendigaster (Swederus, 1795): 23.09.2012. 1 ♀; 25.08.2013. 1 ♀; 01.09.2015. 1 ♀ (3 specimens).

Distribution: Europe, Asia Minor and North America. New for Serbia.

Primary host: Lepidoptera (Arctiidae, Coleophoridae, Lymantriidae, Momphidae, Saturniidae and Tortricidae), Neuroptera (Chrysopidae) and Hymenoptera (Eurytomidae, *Tetramesa* spp.).

Parasitoid host: Diptera (Tachinidae) and Hymenoptera (Braconidae, Eurytomidae and Ichneumonidae).

Eurytoma arctica Thomson, 1876: 26.08.2012. 1 ♀; 23.09.2012. 2 ♀♀; 06.10.2012. 1 ♀; 24.08.2013. 1 ♀; 25.08.2013. 2 ♀♀ (7 specimens).

Distribution: Europe, Russia − Siberia, PR China and Iran. New for Serbia.

Primary host: Coleoptera (Curculionidae, subfam. Scolytinae and Molytinae).

Parasitoid host: Hymenoptera (Braconidae and Pteromalidae).

Eurytoma collaris Walker, 1832: 27.08.2012. 1 ♀; 23.09.2012. 5 ♀♀; 06.10.2012. 1 ♀; 16.09.2013. 1 ♀; 05.08.2015. 1 ♀; 16.09.2015. 1 ♀ (10 specimens).

Distribution: Bulgaria Czech Republic, Slovakia, France, Germany, Hungary, Kazakhstan, Sweden, England and Asia Minor. New for Serbia.

Primary host: Hymenoptera (Eurytomidae, *Tetramesa fulvicollis* (Walk.)).

Parasitoid host: Hymenoptera (Eulophidae, *Pediobius eubius* (Walk.)).

Eurytoma cynipsea Boheman, 1836: 05.07.2017. 1 ♀; 08.07.2017. 1 ♀; 18.08.2017. 1 ♀; 28.08.2017. 1 ♀ (4 specimens).

Distribution: Europe and Central Asia. New for Serbia.

Primary host: Hymenoptera (Cynipidae).

Eurytoma gyorfii Erdös, 1957: 27.09.2014. 1 ♀; 19.08.2015. 1 ♀; 24.08.2015. 1 ♀. (3 specimens).

Distribution: Croatia, Czech Republic, Slovakia, Hungary, France, Italy, Ukraine and Russia – European part. New for Serbia.

Primary host: Coleoptera (Anobiidae).

Eurytoma morio Boheman, 1836: 24.08.2012. 7 ♀♀; 26.08.2012. 3 ♀♀; 27.08.2012. 3 ♀♀; 06.10.2012. 2 ♀♀; 25.08.2013. 1 ♀; 15.09.2013. 5 ♀♀; 16.09.2013. 4 ♀♀; 21.08.2015. 1 ♀; 24.08.2015. 1 ♀; 28.08.2015. 2 ♀♀; 01.09.2015. 4 ♀♀; 03.07.2017. 1 ♀; 05.07.2017. 1 ♀; 17.08.2017. 23 ♀♂; 22.08.2017. 3 ♀♀; 23.08.2017. 14 ♀♂; 24.08.2017. 9 ♀♂; 26.08.2017. 1 ♀; 27.08.2017. 14 ♀♂; 28.08.2017. 9 ♀♂;

02.09.2017. 15 ♀♂; 05.09.2017. 1 ♂, 1 ♀; 08.09.2017. 2 ♂♂; 10.09.2017. 1 ♀; 04.10.2017. 1 ♀ (129 specimens).

Distribution: Palearctic. Known in Serbia (Mihajlović. 1981; Marković & Stojanović, 2003).

Primary host: Coleoptera (Cerambycidae and Curculionidae, subfam. Scolytinae and Molytinae).

Parasitoid host: Hymenoptera (Braconidae and Pteromalidae).

Eurytoma palustris Erdös, 1957: 27.08.2012. 1 ♀; 23.09.2012. 19 ♀♀; 06.09.2012. 2 ♀♀; 24.08.2013. 3 ♀♀; 25.08.2013. 2 ♀♀; 15.09.2013. 4 ♀♀; 16.09.2013. 4 ♀♀; 27.09.2014. 3 ♀♀; 21.08.2015. 1 ♀; 25.08.2015. 1 ♀; 01.09. 2015. 1 ♀ (41 specimens).

Distribution: Hungary, Ukraine, Romania and Russia – European part. New for Serbia.

Primary host: Diptera (Chloropidae).

Eurytoma strigifrons Thomson, 1876: 23.08.2015. 1 ♀ (1 specimen).

Distribution: Europe and Asia Minor. New for Serbia.

Primary host: Hymenoptera (Cynipidae) and Lepidoptera (Tortricidae, Noctuidae and Pieridae).

Parasitoid host: Hymenoptera (Braconidae and Ichneumonidae).

Eurytoma tilicola Hedqvist, 1966: 26.08.2012. 1 ♀; 23.09.2012. 1 ♀; 15.09.2013. 1 ♀; 21.08.2015. 1 ♀; 04-09.2015. 1 ♀ (5 specimens).

Distribution: Sweden, Croatia, Italy, Hungary, France, Finland, Czech Republic, Slovakia and Caucasus. New for Serbia.

Primary host: Coleoptera (Cerambycidae and Buprestidae).

Sycophila biguttata (Swederus, 1795): 29.08.2017. 1 ♀; 02.09.2017. 1 ♀ (2 specimens).

Distribution: Europe, North Africa, Asia Minor, Central Asia and Siberia. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Cynipidae on *Quercus, Rosa, Rubus* and *Pistacia*).

Sycophila flavicollis Walker 1834: 27.08.2017. 1 ♀ (1 specimen).

Distribution: Europe, Asia Minor and Iran. New for Serbia.

Primary host: Hymenoptera (Cynipidae on *Quercus* spp.).

Family Leucospidae (1 specimen)

Leucospis dorsigera Fabricius, 1775: 27.08.2017. 1 ♂ (1 specimen).

Distribution: Europe, North Africa, Asia Minor, Near East and Central Asia. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Apidae).

Parasitoid host: Hymenoptera (Ichneumonidae).

Family Mymaridae (1 specimen)

Ooctonus novickyi Soyka, 1950: 28.09.2015. 1 ♀ (1 specimen).

Distribution: Austria, Bulgaria, Poland, Romania, Sweden, Switzerland and Russia − Primorye Kray. New for Serbia.

Primary host: not known.

Family Ormyridae (5 specimens)

Ormyrus nitidulus Fabricius 1804: 02.08.2017. 1 ♀ (1 specimen).

Distribution: Europe, North Africa, Near East and Iran. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Cynipidae).

Ormyrus rufimanus Mayr, 1904: 24.08.2017. 1 ♀; 28.08.2017. 2 ♀♀; 29.08.2017. 1 ♀ (4 specimens).

Distribution: Europe, Near East and PR China. New for Serbia.

Primary host: Hymenoptera (Cynipidae).

Family Perilampidae (45 specimens)

Perilampus intermedius Bouček, 1956: 24.08.2012. 6 ♀♂; 25.08.2012. 1 ♀; 26.08.2012. 1 ♀; 27.08.2012. 10 ♀♂; 25.08.2013. 1 ♀; 15.09.2013. 4 ♀♂; 16.09.2013. 1 ♀; 27.08.2012. 3 ♀♀ (27 specimens).

Distribution: Czech Republic, Slovakia, Croatia, Finland, Germany and Sweden. New for Serbia

Primary host: not known.

Perilampus laevifrons Dalman, 1822: 25.08.2012. 1 ♂; 25.08.2013. 1 ♂ (2 specimens).

Distribution: Europe, Mongolia and North Africa. Known in Serbia (Bouček, 1977).

Primary host: Lepidoptera (Tortricidae) and Neuroptera (Chrysopidae).

Parasitoid host: Hymenoptera (Braconidae and Ichneumonidae).

Perilampus masculinus Bouček, 1956: 24.08.2012. 1 ♂; 16.09.2013. 1 ♂ (2 specimens).

Distribution: Europe and Central Asia. New for Serbia.

Primary host: not known.

Perilampus tristis Mayr, 1905: 24.08.2012. 2 ♂♂, 2 ♀♀; 26.08.2012. 1 ♀; 27.08.2012. 5 ♂♂, 3 ♀♀; 24.08.2013. 1 ♂. (14 specimens).

Distribution: Holarctic. New for Serbia (Tadić, 1957; Vasić *et al.*, 1975).

Primary host: Lepidoptera (Cossidae, Gelechiidae, Oecophoridae, Pyralidae and Tortricidae) and Raphidioptera (Raphidiidae).

Parasitoid host: Hymenoptera (Braconidae and Ichneumonidae) and Diptera (Tachinidae).

Family Pteromalidae (142 specimens)

Agrilocida ferrieri Steffan,1964: 25.08.2012. 1 ♂, 1 ♀; 27.08.2012. 1 ♀; 25.08.2013. 1 ♀; 04.07.2017. 1 ♀; 05.07.2017. 1 ♀, 1 ♂ (7 specimens).

Distribution: France, North Africa, Israel, Iran and Central Asia. New for Serbia.

Primary host: Coleoptera (Buprestidae, *Agrilus angustulus* (Ill.) and *Sphenoptera* sp. and Curculionidae, subfam. Scolytinae, *Scolytus multistriatus* (Marsh.)).

Asaphes vulgaris Walker, 1834: 04.10.2017. 1 ♀ (1 specimen).

Distribution: Cosmopolitan. Known in Serbia (Vukasović, 1928; 1931; Bouček, 1977; Tomanović *et al.*, 1999).

Primary host: Coleoptera Curculionidae), Diptera (Agromyzidae, Cecidomyiidae and Syrphidae) and Hemiptera (Aphididae, Coccidae, Diaspididae, Pseudococcidae and Psyllidae).

Parasitoid host: Hymenoptera (Aphelinidae, Braconidae, Charipidae, Encyrtidae, Ichneumonidae and Figitidae).

Cheiropachus quadrum (Fabricius, 1787): 24.08.2012. 1 ♂; 23.09.2012. 1 ♂; 15.09.2013. 2 ♂♂; 16.09.2013. 1 ♀; 31.08.2015. 1 ♀; 01.09.2015. 1 ♀; 23.08.2017. 1 ♂; 27.08.2017. 1 ♀; 28.08.2017. 1 ♀; 29.08.2017. 1 ♀; 02.09.2017. 1 ♀; 05.09.2017. 1 ♀; 08.09.2017. 1 ♀. (14 specimens).

Distribution: all continents, except Australia. Known in Serbia (Bouček, 1977; Marković & Stojanović, 1996; 2003; Mihajlović *et al.*, 1994; Mihajlović, 1981).

Primary host: Coleoptera (Bostrychidae, Cerambycidae, Curculionidae, subfam. Mesoptilinae and Scolytinae) and Lepidoptera (Cossidae).

Conomorium patulum (Walker, 1835): 27.09. 2014. 2 ♀♀ (2 specimens).

Distribution: Palearctic. Known in Serbia (Bogavac, 1953; Bouček, 1977).

Primary host: Lepidoptera (Arctiidae, Geometridae, Gracillaridae, Lasiocampidae, Noctuidae, Lymantriidae, Lyonetidae, Notodontidae and Tineidae).

Dibrachys microgastri (Bouche, 1834): 28.08. 2017. 1 ♀ (1 specimen).

Distribution: Cosmopolitan. Known in Serbia Bogavac, 1953; Vasić & Sisojević, 1958; Vukasović, 1928).

Primary host: Coleoptera (Anobiidae, Bruchidae, Cerambycidae, Coccinellidae, Cucujidae, Curculionidae, Dryophthoridae and Trogossitidae), Dermaptera (Forficulidae), Diptera (Agromyzidae, Calliphoridae, Hippoboscidae, Muscidae and Tephritidae), Hymenoptera (Apidae, Cephidae, Diprionidae, Sphecidae, Tenthredinidae and Vespidae), Lepidoptera (Arctiidae, Bucculatricidae, Choreutidae, Coleophoridae, Gelechiidae, Glyphipterygidae, Gracillariidae, Lasiocampidae, Lymantridae, Lyonetidae, Noctuidae, Notodontidae, Hymphalidae, Oecophoridae, Pieridae, Psychidae, Pterophoridae, Pyralidae, Saturniidae, Sesiidae, Tineidae, Tortricidae, Yponomeutidae and Zygaenidae) and Neuroptera (Chrysopidae, Hemerobiidae and Sympherobiidae).

Parasitoid host: Diptera (Tachinidae, Sarcophagidae), Hymenoptera (Braconidae, Chalcididae, Eulophidae, Eurytomidae, Pteromalidae, Diprionidae, Ichneumonidae) and Strepsiptera (Mengenillidae).

Dinarmus acutus Thomson, 1878: 24.08.2012. 1 ♀; 25.08.2012. 2 ♀♀; 16.09.2013. 1 ♂; 26.08.2012. 1 ♂; 27.08.2012. 3 ♂♂, 3 ♀♀; 25.08.2013. 1 ♂; 30.08.2013. 1 ♀; 15.09.2013. 2 ♂♂, 1 ♀; 19.08.2015. 1 ♀; 25.08.2015. 1 ♀; 30.08.2015. 2 ♂♂; 01.09.2015. 1 ♂; 02-04.09.2015. 1 ♂; 04.07.2017. 1 ♂, 1 ♀; 05.07.2017. 2 ♀♀; 18.08.2017. 1 ♂, 1 ♀; 19.08.2017. 1 ♀; 22.08.2017. 1 ♀; 23.08.2017. 1 ♀; 24.08.2017. 1 ♀; 26.08.2017. 2 ♀♀; 27.08.2017. 8 ♀♂; 28.08.2017. 8 ♀♂; 29.08.2017. 2 ♀, 2 ♂; 01.09.2017. 3 ♀♀; 02.09.2017. 4 ♀♀, 4 ♂♂; 08.09.2017. 1 ♀; 10.09.2017. 3 ♀♀; 04.10.2017. 1 ♀ (70 specimens).

Distribution: Holarctic and Afrotropic. New for Serbia.

Primary host: Coleoptera (Chrysomelidae, Bruchinae) and Hemiptera (Coccidae).

Parasitoid host: Hymenoptera (Pteromalidae, *Dinarmus* spp.).

Eulonchetron torymoides (Thomson, 1878): 24.08.2012. 1 ♀; 27.08.2012. 2 ♀♀; 27.08.2017. 1 ♀; 29.08.2017. 1 ♀; 10.09.2017. 1 ♀ (6 specimens).

Distribution: Czech Republic, Slovakia, Denmark, Germany, Netherlands, Croatia, England, Romania, Sweden and Canada – Ontario. New for Serbia.

Primary host: Hymenoptera (Tenthredinidae, *Pontania* spp.).

Heydenia pretiosa Forster, 1856: 20.08.2015. 1 ♀; 02-04.09.2015. 1 ♀ (2 specimens).

Distribution: Europe, Israel and Iran. New for Serbia.

Primary host: Coleoptera (Buprestidae, Cerambycidae and Curculionidae, subfam. Scolytinae and Mesoptilinae).

Parasitoid host: Hymenoptera (Ichneumonidae).

Homoporus luniger (Nees, 1834): 24.08.2012. 1 ♀; 01.09.2015. 1 ♀; 04.07.2017. 1 ♀; 26.08.2017. 1 ♀ (5 specimens).

Distribution: Palearctic. New for Serbia.

Primary host: Hymenoptera (Eurytomidae) and Diptera (Cecidomyiidae).

Parasitoid host: Hymenoptera (Eurytomidae).

Oodera formosa (Giraud, 1863): 25.08.2013. 1 ♀; 05.07.2017. 1 ♀. (2 specimens).

Distribution: Europe and Iran. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Buprestidae, Cleridae, Ptinidae and Curculionidae, subfam. Scolytinae).

Pachyneuron aphidis (Bouche, 1834): 27.08.2012. 7 ♀♂ (7 specimens).

Distribution: Cosmopolitan. Known in Serbia (Vukasović, 1928; 1931; Bouček, 1977; Tomanović *et al.*, 1999).

Primary host: Diptera (Agromyzidae, Cecidomyiidae and Syrphidae), Coleoptera (Coccinellidae), Hemiptera (Aphididae, Coccidae, Kermesidae, Pseudococcidae and Psyllidae), Lepidoptera (Tortricidae and Gelechiidae) and Hymenoptera (Cynipidae).

Parasitoid host: Hymenoptera (Aphelinidae, Braconidae, Charipidae, Encyrtidae, Figitidae and Scelionidae).

Pachyneuron muscarum (Linnaeus, 1758): 30.08.2015. 1 ♀ (1 specimen).

Distribution: Palearctic. Known in Serbia (Mitić-Mužina, 1964; 1967; Bouček, 1977; Tomanović *et al.*, 1999).

Primary host: Coleoptera (Coccinellidae and Curculionidae), Diptera (Agromyzidae, Cecidomyiidae and Chloropidae), Hemiptera (Aphididae, Coccidae, Diaspididae, Eriococcidae, Kermesidae Pseudococcidae and Psyllidae), Hymenoptera (Pamphiliidae) and Lepidoptera (Lasiocampidae, Tortricidae and Yponomeutidae).

Parasitoid host: Hymenoptera (Aphelinidae, Braconidae, Encyrtidae, Eulophidae and Trichogrammatidae).

Pachyneuron nelsoni Girault, 1928: 02.09.2017. 1 ♀ (1 specimen).

Distribution: Europe, Asia, Africa and Australia. New for Serbia.

Primary host: Diptera (Syrphidae) and Hemiptera (Aphididae).

Pachyneuron solitarium (Hartig, 1838): 18.08.2017. 1 ♀; 26.08.2017. 1 ♀; 27.08.2017. 1 ♂; 02.09.2017. 1 ♀; 04.10.2017. 1 ♀ (5 specimens).

Distribution: Palearctic. New for Serbia.

Primary host: Coleoptera (Coccinellidae), Hemiptera (Aphididae, Coccidae, Pseudococcidae and Psyllidae) and Lepidoptera (Lasiocampidae and Lymantridae).

Parasitoid host: Hymenoptera (Braconidae, Aphelinidae, Encyrtidae, Scelionidae and Trichogrammatidae).

Plutothrix trifasciata Thomson, 1878: 23.08.2015. 1 ♀ (1 specimen).

Distribution: Europe, Kazakhstan and South Korea. New for Serbia.

Primary host: not known.

Psilocera obscura Walker, 1833: 25.08.2013. 1 ♂, 1 ♀; 15.09.2013. 2 ♀♀; 01.09.2015. 2 ♀♀; 08.09.2015. 1 ♀; 18.08.2017. 1 ♀; 29.08.2017. 1 ♂, 1 ♀; 08.09.2017. 1 ♀ (11 specimens).

Distribution: Europe, Asia Minor and Kazakhstan. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Braconidae, *Apanteles glomeratus* (L.)).

Rhopalicus quadratus (Ratzeburg, 1844): 25.08.2012. 1 ♀ (1 specimen).

Distribution: Europe, Russia, PR China and Japan. New for Serbia.

Primary host: Coleoptera (Curculionidae, subfam. Scolytinae and Mesoptilinae).

Rohatina monstrosa Bouček, 1954: 02-04.09.2015. 1 ♀ (1 specimen).

Distribution: Czech Republic, Slovakia, Croatia, Romania, Sweden and Spain. New for Serbia.

Primary host: not known.

Sphegigaster nigricornis (Nees, 1834): 01.09.2015. 1 ♀ (1 specimen).

Distribution: Europe and Asia (Kazakhstan and Sakhalin). New for Serbia.

Primary host: Diptera (Agromyzidae).

Systasis annulipes (Walker, 1834): 27.08.2012. 1 ♀ (1 specimen).

Distribution: Europe. New for Serbia.

Primary host: Hymenoptera (Cynipidae, *Panteliella* sp.).

Systasis encyrtoides Walker, 1834: 05.09.2017. 1 ♀ (1 specimen).

Distribution: Holarctic. Known in Serbia (Bouček, 1977; Petrović & Mihajlović, 1994).

Primary host: Coleoptera (Bruchidae, Apionidae and Curculionidae), Diptera (Agromyzidae, Cecidomyiidae and Tephritidae) and Lepidoptera (Tortricidae).

Trichomalus rufinus Walker, 1835: 04.10.2017. 1 ♀ (1 specimen).

Distribution: Europe. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Apionidae).

Trigonoderus cyanescens (Forster, 1841): 28.09.2014. 1 ♀ (1 specimen).

Distribution: Europe. Known in Serbia (Bouček, 1977).

Primary host: Coleoptera (Buprestidae, *Melanophila cyanea* (F.) and Curculionidae subfam. Scolytinae, *Scolytus intricatus* Ratz.)

Family Torymidae (206 specimens)

Glyphomerus stigma (Fabricius 1793): 24.08.2012. 1 ♂; 03.07.2017. 3 ♂♂; 04.07.2017. 1 ♀, 5 ♂♂; 05.07.2017. 2 ♀♀, 5 ♂♂; 18.08.2017. 1 ♀; 26.08.2017. 1 ♀; 27.08.2017. 1 ♂, 1 ♀; 28.08.2017. 1 ♀, 6 ♂♂; 29.08.2017. 1 ♂, 1 ♀; 10.09.2017. 1 ♀. (31 specimens).

Distribution: Holarctic. Known in Serbia (Vukasović, 1928).

Primary host: Hymenoptera (Cynipidae) on *Rosa* spp.

Glyphomerus tibialis Forster, 1956: 26.08.2012. 1 ♀; 27.08.2012. 3 ♀♀ (4 specimens).

Distribution: Europe, Asia Minor and Mongolia. New for Serbia.

Primary host: Hymenoptera (Cynipidae and Eurytomidae).

Eridontomerus laticornis (Forster, 1859): 24.08.2012. 1 ♀ (1 specimen).

Distribution: Europe. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Eurytomidae, *Tetramesa* spp.).

Exopristus trigonomerus (Masi, 1916): 28.08.2015. 1 ♂ (1 specimen).

Distribution: Europe, North Africa Central Asia, Iran and Mongolia. New for Serbia.

Primary host: Coleoptera (Curculionidae), Hemiptera (Lecanodiaspididae) and Lepidoptera (Pyralidae).

Parasitoid host: Hymenoptera (Braconidae).

Monodontomerus aeneus (Fonscolombe, 1832): 24.08.2012. 8 ♀♀; 25.08. 2012. 3 ♀♀; 26.08.2012. 1 ♀; 27.08.2012. 9 ♀♀; 11.08.2015 1 ♀; 19.08.2015. 2 ♀♀; 22.08.2015. 1 ♀; 23.08.2015. 1 ♀; 31.08.2015. 1 ♂ (43 specimens).

Distribution: Holarctic. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Apidae, Diprionidae, Pamphiliidae, Sphecidae, Tenthredinidae and Vespidae) and Lepidoptera (Arctiidae, Lasiocampidae, Lymantridae, Pieridae and Tortricidae).

Parasitoid host: Diptera (Tachinidae), Hymenoptera (Braconidae, Chrysididae and Ichneumonidae).

Monodontomerus obscurus Westwood, 1833: 27.08.2012. 1 ♀; 16.09.2013. 1 ♀ (2 specimens).

Distribution: Holarctic. Known in Serbia (Krunić *et al.*, 1991).

Primary host: Coleoptera (Curculionidae), Diptera (Stratiomyidae), Hymenoptera (Apidae, Chrysididae, Diprionidae, Vespidae and Sphecidae) and Lepidoptera (Gelechiidae, Tortricidae and Lymantridae).

Pseudotorymus papaveris (Thompson, 1876): 15.09.2013. 1 ♀ (1 specimen).

Distribution: Europe, Asia Minor and Mongolia. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Cecidomyiidae) and Hymenoptera (Cynipidae).

Torymus armatus Boheman, 1834: 22.08.2015. 1 ♂; 10.08.2017. 1 ♀ (2 specimens).

Distribution: Palaearctic. New for Serbia.

Primary host: Hymenoptera (Apidae, Crabronidae and Sphecidae).

Torymus bedeguaris (Linnaeus, 1758): 24.08.2012. 1 ♀; 27.08.2012. 1 ♀; 10.09.2017. 1 ♀, 1 ♂ (4 specimens).

Distribution: Holarctic. Known in Serbia (Vukasović, 1928; Bouček, 1977).

Primary host: Diptera (Cecidomyiidae) and Hymenoptera (Cynipidae).

Parasitoid host: Hymenoptera (Ichneumonidae, *Orthopelma mediator*).

Torymus calcaratus Nees, 1834: 24.08.2012. 3 ♀♀, 5 ♂♂; 25.08.2012. 2 ♀♀, 1 ♂; 26.08.2012. 4 ♀♀; 27.08.2015. 6 ♀♀, 1 ♂; 24.08.2013. 14 ♀♀, 7 ♂♂; 16.09.2013. 1 ♀, 2 ♂♂; 05.08.2015. 1 ♂; 19.08.2015. 4 ♀♀, 2 ♂♂; 20.08.2015. 1 ♂; 21.08.2015. 1 ♀; 22.08.2015. 2 ♀♀; 23.08.2015. 6 ♀♀, 7 ♂♂; 24.08.2015. 4 ♀♀, 1 ♂; 25.08.2015. 2 ♀♀, 1 ♂; 27.08.2015. 1 ♀, 1 ♂; 28.08.2015. 1 ♀; 29.08.2015. 1 ♀; 30.08.2015. 2 ♂♂; 31.08.2015. 1 ♂; 01.09.2015. 1 ♀, 1 ♂; 02-04.09.2015. 1 ♀, 1 ♂; 15.09.2015. 1 ♀, 2 ♂♂; 30.09.2015. 1 ♂; 04.07.2017. 1 ♂; 05.07.2017. 3 ♂♂; 08.07.2017. 1 ♂; 10.08.2017. 1 ♂; 19.08.2017. 1 ♂; 26.08.2017. 2 ♂♂; 27.08.2017. 1 ♀; 28.08.2017. 2 ♀♀, 1 ♂; 29.08.2019. 2 ♀♀, 1 ♂; 01.09.2017. 1 ♂; 10.09.2017. 1 ♂ (110 specimens).

Distribution: Palearctic. Known in Serbia (Bouček, 1977).

Primary host: Hymenoptera (Cynipidae and Sphecidae).

Torymus cupreus (Spinola, 1808): 27.08.2012. 1 ♂; 02-04.09.2015. 1 ♀; 19.08.2015. 1 ♀ (3 specimens).

Distribution: Europe, Central Asia, Myanmar and Israel, New for Serbia.

Primary host: Hymenoptera (Apidae and Sphecidae).

Torymus cyaneus Walker, 1847. f. *lazulinus* Fodster, 1859: 22.08.2015. 1 ♀ (1 specimen).

Distribution: France, Hungary, England, Poland, Ukraine and Russia - St Petersburg). New for Serbia.

Primary host: Hymenoptera (Cynipidae).

Torymus ventralis (Fonscolombe, 1832): 01.09.2015. 1 ♀ (1 specimen).

Distribution: Europe. Known in Serbia (Bouček, 1977).

Primary host: Diptera (Cecidomyiidae).

Trichogrammatidae (1 specimen)

Ufens dilativena Nowicki, 1940: 05.07.2017. 1 ♀ (1 specimen).

Distribution: Bulgaria, Croatia, South Africa, Madagascar. New for Serbia.

Primary host: Hemiptera (Cicadellidae, *Batracomorpha capeneri* Linnavuori, 1957).

Discussion and Conclusions

In the period from 2012 to 2017, during the summer months (from the beginning of July until the beginning of October), imagoes of the Chalcidoidea superfamily were collected at the location Draževac near Obrenovac, on a single *C. radicans* tree, which was about 50 years old. The plant *C. radicans* was very attractive to many Hymenoptera groups, which was unexpected. There are very few phytophagous insect species (very polyphagous species) on *C. radicans* originating from North America, so the presence of the parasitoids of phytophagous insects could have been even less expected. The number of insect pollinators was also relatively small in spite of the fact that the flowers are melliferous. The reason for this is the specific flower structure, which is in the form of a long trumpet, so that insect pollinators invest a lot of effort to reach the bottom of the flower where the floral nectaries are located. These pollinators include several bee species, the most common being the honeybee *Apis mellifera* (L.), and much less common the bumblebee. In the country of origin, the main pollinators are hummingbirds. However, due to the difficultly in accessing the nectar, pollinators (insects and hummingbirds) often bite an opening at the base of the flower corolla through which they reach nectar without pollinating the flower (Keeler, 1980). In order to ensure certain pollination, *C. radicans* has so-called extrafloral nectaries distributed around the sepal, pedicel and green fruits (Edge, 2010). The secretion of these nectaries has a different chemical composition and does not attract pollinators, but rather aggressive Hymenoptera, such as species from the families: Vespidae, Formicidae, Pompilidae, Sphecidae, etc. The abovementioned Hymenoptera pay mass visits to *C. radicans*, attracted by the scent of the extrafloral nectar, lingering by the blossoms, where they find their favorite food. They also fiercely defend their source of food and reject all other visitors, as well as pollinators who might try to reach the flower nectar in an easier way. However, in addition to the aforementioned aggressive Hymenoptera, extrafloral nectar is also very attractive to other Hymenoptera, especially those from the Apocrita group, and particularly to representatives of the Chalcidoidea superfamily. There has been only one mention of this in the literature (Popesku, 2012). The author of the article collected Chalcidoidea on *C. radicans* at two locations in eastern Romania, and the material was determined to the level of families (total 10).

During our six-year research, we collected abundant material on Red Hymenoptera from the Apocrita suborder, i.e. from two groups of families, Parasitica and Aculeata. In addition to the Chalcidoidea superfamily, which will be mentioned later, the registered families that belong to Apocrita parasitica are

Braconidae, Chrysididae, Cynipidae, Evaniidae, Gasteruptiidae, Ichneumonidae, Megaspilidae, Proctotrupidae and Scelionidae, and to Apocrita aculeata Apidae, Formicidae, Pompilidae, Sphecidae and Vespidae. The largest number of specimens belongs to the families Formicidae, Vespidae, Chrysididae, Apidae and Sphecidae. All these insects were attracted by the nectar from extrafloral nectaries.

Our research focused only on the Chalcidoidea superfamily specimens. According to the number of specimens caught on *C. radicans*, they were just slightly less numerous than those belonging to the Formicidae family. During the six-year research, a total of 2117 specimens were collected (Table 1). The prepared and determined material included 13 out of 16 families known as part of the fauna of Serbia, and a total of 116 Chalcidoidea species were identified. Bearing in mind that 430 species of the Chalcidoidea superfamily have been known in Serbia, this means that around 30% of them were collected at only one location and on a single *C. radicans* tree.

A total of 63 determined species are new to the fauna of Serbia, and these are *Antrocephalus hypsopygiae* Masi, *Brachymeria moerens (*Ruschka, 1922), *Brachymeria vitripennis* (Forster, 1859), *Dirhinus hesperidum* (Rossi, 1790), *Neohybothorax hetera* (Walker, 1834), *Proconura nigripes* (Fonscolombe, 1832), *Psilochalcis subarmata* (Forster,1855), *Psilochalcis ligustica* (Masi, 1929) (Fam. Chalcididae), *Cheiloneurus boldyrevi* Trjapitzin & Agekyan, 1978, *Discodes coccophagus* (Ratzeburg, 1848), *Homalotylus platynaspidis* Hoffer, 1963, *Leptomastix flava* Mercet, 1921, *Paratetracnemoidea malenotti* (Mercet, 1918) (Fam. Encyrtidae), *Allocerastichus doderi* Masi, 1924, *Euderus agrili* Bouček, 1963, *Microlycus heterocerus* Thomson 1878, *Necremnus hungaricus* (Erdös 1951), *Platyplectrus laeviscuta* (Thomson 1878), *Metaplectrus szepligetii* (Erdös, 1951), *Pnigalio xerophilus* (Erdös, 1954), *Elasmus anius* Walker, 1846, *Elasmus biroi* Erdös, 1964, *Elasmus rufiventris* Ferrière, 1947**,** *Elasmus steffani* Viggiani, 1967, *Elasmus unicolor* Rondani, 1877. (Fam. Eulophidae), *Anastatus catalonicus* Bolivar y Pieltain, 1935, *Calosota aestivalis* Curtis, 1836, *Eusandalum merceti* (Bolivar y Pieltain, 1926) (Fam. Eupelmidae), *Aximopsis nodularis* (Boheman, 1836), *Bruchophagus kelebiana* (Erdös, 1957), *Eurytoma afra* Boheman, 1836, *Eurytoma appendigaster* (Swederus, 1795), *Eurytoma arctica* Thomson, 1876, *Eurytoma collaris* Walker, 1832, *Eurytoma cynipsea* Boheman, 1836, *Eurytoma gyorfii* Erdös, 1957, *Eurytoma palustris* Erdös, 1957, *Eurytoma strigifrons* Thomson, 1876, *Eurytoma tilicola* Hedqvist, 1966, *Sycophila flavicollis* Walker 1834 (Fam. Eurytomidae), *Ooctonus novickyi* Soyka, 1950. (Fam. Mymaridae), *Perilampus intermedius* Bouček, 1956, *Perilampus masculinus* Bouček, 1956. (Fam. Perilampidae), *Agrilocida ferrieri* Steffan,1964, *Dinarmus acutus* Thomson, 1878, *Eulonchetron torymoides* (Thomson, 1878), *Homoporus luniger* (Nees, 1834), *Pachyneuron nelsoni* Girault, 1928, *Pachyneuron solitarium* (Hartig, 1838), *Plutothrix trifasciata* Thomson, 1878, *Rhopalicus quadratus* (Ratzeburg, 1844), *Rohatina monstrosa* Bouček, 1954, *Sphegigaster nigricornis* (Nees, 1834), *Systasis annulipes* (Walker, 1834) (Fam. Pteromalidae), *Glyphomerus tibialis* Forster, 1956, *Exopristus trigonomerus* (Masi, 1916), *Monodontomerus obscurus* Westwood, 1833, *Torymus armatus* Boheman, 1834, *Torymus cupreus* (Spinola, 1808), *Torymus cyaneus* Walker, 1847 f. *lazulinus* Fodster, 1859 (Fam. Torymidae) and *Ufens dilativena* Nowicki, 1940 (Fam. Trichogrammatidae).

A total of 11 species are new to the Balkan peninsula, and these are *N. hetera* (Chalcididae), *A. doderi, M. heterocerus, N. hungaricus, M. szepligetii, E. biroi* (Eulophidae), *B. kelebiana* (Eurytomidae), *P. masculinus* (Perilampidae), *A. ferrieri, R. quadratus* (Pteromalidae) and *T. cyaneus* f. *lazulinus* Fodster, 1859 (Torymidae).

From Table I it can be seen that the most numerous captured specimens belong to the families Chalcididae, Eurytomidae, Torymidae, Eupelmidae and Pteromalidae. According to the number of collected Chalcidoidea species specimens, the most numerous were the families Pteromalidae, Eulophidae, Chalcididae, Eurytomidae, Torymidae and Encyrtidae. The number of species that are new to the fauna of Serbia is highest in the families Eulophidae, Pteromalidae and Eurytomidae.

Table I. The number of collected specimens, species and new species to the fauna of Serbia by families of the Chalcidoidea superfamily

Family	Number of specimens	Number of species	Number of new species to the fauna of Serbia
Aphelinidae	1	1	-
Chalcididae	978	16	8
Encyrtidae	21	10	5
Eulophidae	62	22	12
Eupelmidae	172	8	3
Eurytomidae	484	14	11
Leucospidae	1	1	-
Mymaridae	1	1	1
Ormyridae	5	2	1
Perilampidae	45	4	2
Pteromalidae	143	23	12
Torymidae	204	13	6
Trichogrammatidae	1	1	1
Total	**2117**	**116**	**62**

It is interesting to note that some Chalcidoidea species can very rarely be caught in nature using the sweeping method, Malaise traps or yellow traps. However, the same species can successfully be captured by the sweeping method on *C. radicans*. For example, the species *Antrocephalus hypsopygiae* Masi (Chalcididae) is known for a single specimen recorded on the Balkan Peninsula in Croatia – Split in 1924 (Leg. Novak P.). During our research, a total of 486 specimens of both females and males of this species were collected. The finding of the species *Agrilocida ferrieri* Steffan, 1964 (Pteromalidae), has until now been known in Europe only in southern France, and 7 specimens, both females and males, were captured during our research. The species *Bruchophagus kelebiana* (Erdös, 1957) (Eurytomidae), *Metaplectrus szepligetii* (Erdös, 1951) and *Elasmus biroi* Erdös, 1964 (Eulophidae) were known only in Hungary, and we recorded them in Serbia, so they represent new speciesto the Balkan peninsula fauna.

Based on literature data, there are no known hosts for 13 determined species. The most numerous parasitoids among the primary parasitoids are defoliator parasitoids (22 species), gall forming insects (18), xylophagous insects (17), leaf mining insects (10) and very polyphagous species (8). A total of 19 species of secondary parasitoids have been found. However, they are also primary parasitoids.

Regarding species of the Chalcidoidea superfamily, *C. radicans* is very important for two reasons. Firstly, the flowering period is from the beginning of June to mid-September. Hence, in the hottest time of the year from mid-July to early October, numerous Chalcidoidea species have an excellent source of food, which ensures their survival during the hottest time of the year. They are the most abundant in years of extreme drought, when daytime temperatures are the highest. Since almost all Chalcidoidea species on *C. radicans* are natural enemies of other insects, their role in maintaining the biological balance in nature is precious, while their survival in nature under adverse climatic conditions is actually helped by *C. radicans*, which provides them with the necessary food. Secondly, sweeping on *C. radicans* plants is a new method for collecting and studying the fauna of Chalcidoidea, but also of some other Hymenoptera groups. During the period of six years, a total of 2117 specimens were captured on a single *C. radicans* plant at only one location. Among them, 116 species of Chalcidoidea were determined, of which 64 were new to the fauna of Serbia. Hence, it

can be assumed that at several locations at different altitudes a significantly larger number of specimens and species would be collected. Therefore, future studies of the Chalcidoidea superfamily fauna should use *C. radicans* as a "bait plant" for the representatives of this group of insects.

References

Bogavac, M. (1953). Neka zapažanja o parazitima gubara. *Zaštita bilja 16-17,* 58-80. Beograd.

Bogavac, M. (1959). Platanov miner – *Lithocolletis platani* Stgr. (Lepidoptera, Gracillaridae). *Zaštita bilja 51*, 51-61. Beograd.

Bouček, Z. (1977). A faunistic review of the Yugoslavian Chalcidoidea (Parasitic Hymenoptera). *Acta entomologica Jugoslavica*, *13*,1-145. Supplementum. Zagreb.

Edge, Andrea Alexis (2010). *Characteristics of nectar production and standing crop in Campsis radicans (Bignoniaceae)*. Electronic Thesis and Dissertations. Paper 1694. East Tennessee State University. https://dc.etsu.edu/etd/1694

Freise, J., Heitland, W., & Tosevski, I. (2002) Parasitism of the horse-chestnut leaf miner, *Cameraria ohridella* Deschka and Dimiè (Lep., Gracillariidae), in Serbia and Macedonia. *Journal of Pest Sciences*, *75*, 152–157.

Graora, D., & Spasić, R. (2008). Prirodni neprijatelji *Pseudaulacaspis pentagona* Targioni-Tozzetti u Srbiji [Natural enemies of Pseudaulacaspis pentagona Targioni-Tozzetti in Serbia]. *Pesticides and Phytomedicine*, *23*, 11-16.

Graora, D., Mihajlović, Lj., & Stojnić, B. (1994): Prirodni neprijatelji štitastih vaši (*Homoptera, Diaspididae*) na jabuci. In: *Zaštita bilja danas i sutra* (Šestović M., Nešković N. i Perić I., eds.). Društvo za zaštitu bilja Jugoslavije. Beograd, 361-371.

Hoffer, A. (1970). First contribution to the knowledge of the Yugoslavian Encyrtidae (Hymenoptera, Chalcidoidea). *Studia Entomologica Forestalia*, *1*(10),151-168.

Hoffer, A. (1976). Zweiter Beitrag zur Kenntis des Arten der Familie Encyrtidae (Hymenoptera, Chalcidoidea Jugoslawiens. *Studia Entomologica Forestalia*, 2(2), 19-39.

Keeler, K. H. (1980). *Distribution of plants with extrafloral nectaries in temperate communities*. University of Nebraska. Lincoln. Faculty publications in the Biological Sciences, 281pp.

Krunić, M., Brajković, M., Mihajlović, Lj., & Tomanović, Ž. (1991). *Megachile rotundata* Fab. (Hymenoptera, Megachilidae) populations and their accompanying fauna in Yugoslavia. *Proceedings of the Fourth European Congress of Entomology and the XIII Internationale Symposium fur die Entomofaunistik Mittel europas*, 1-6 September, Godollo, Hungary, *2*, 527-531.

Marković, Č., & Stojanović, A. (1996). Parasitoid complexof *Scolytus intricatus* Ratz. Coleoptera: Scolytidae) in the region of Serbia. *Zaštita bilja 47*(3), 255-266. Beograd.

Marković, Č., & Stojanović, A. (2003). Significance of parasitoids in the reduction of oak bark Beetle *Scolytus intricatus* Ratzeburg (Col., Scolytidae) in Serbia. *Journal of Applied Entomology*, *127*(1), 23-28.

Mihajlović, Lj. (1981). Paraziti *Magdalis armigera* Geoffr. (Coleoptera, Curculionidae) na području Beograda. Referat saopšten na III godišnjem naučnom sastanku Entomološkog društva Srbije. Beograd. [Oral report].

Mihajlović, Lj., Marković, Č., Brajković, M., & Stojanović, A. (1994). Parazitsko-predatorski kompleks malog voćnog potkornjaka *Scolytus rugulosus* Mull. (*Coleoptera Scolytidae*). Društvo za zaštitu bilja Jugoslavije. Beograd. *Zaštita bilja danas i sutra*, 383-394.

Mitić-Mužina, N. (1964). Uloga parazita i predatora u redukciji populacije šljivine štitaste vaši (*Parthenolecanium corni* Bouche) u Srbiji. *Zaštita bilja*, *80*, 359-378. Beograd.

Mitić-Mužina, N. (1967). Paraziti kuglaste štitaste vaši (*Sphaerolecanium prunastri* Fonsc. Homoptera, Coccidae). *Zaštita bilja*, *93-95*,183-187. Beograd.

Noyes, J. S. (2017). Universal Chalcidoidea Database. http/www.nhm.ac.uk/chalcidoids. London.

Petrović, R., & Mihajlvović, Lj. (1994). Parazitoidi mušica galica lucerke i njihov značaj u našoj zemlji. Društvo za zaštitu bilja Jugoslavije. Beograd. *Zaštita bilja danas i sutra*, 373-382.

Popesku E. I. (2012). Chalcidoids (Hymenoptera: Chalcidoidea) from flowers of *Campsis radicans* (L.) (Lamiales: Bignoniaceae) from eastern part of Romania. *Annual Zoological Congress of "Grigore Antipa" Museum. 21-23. November 2012. Book of Abstracts,68.* Bucharest.

Sisojević, P. (1953). Prilog proučavanju uloge tahina kao regulatora brojnosti populacija gubara u 1950. godini. *Zbornik Srpske Akademije Nauka i Umetnosti*, *31*:63-92. Beograd.

Stojanović, A., & Marković, Č. (2004) Parasitoid complex of *Cameraria ochridella* Deschka & Dimić (Lepidoptera, Gracillariidae) in Serbia. *Phytoparasitica*, *32*(2), 132-140.

Tadić, M. (1957). Jabučni smotavac (*Carpocapsa pomonella* L.) Biologija kao osnova za njegovo suzbijanje. *Posebno izdanje Instituta za zaštitu bilja 4*,100 pp. Beograd.

Tadić, M., & Binčev, B. (1959). *Ooencyrtus kuwanai* How. u Jugoslaviji. *Zaštita bilja*, *52-53*, 51-59. Beograd.

Tomanović, Ž., Brajković, M., Petrocić, O., Krunić, M., Mihajlović, Lj., & Miloradović, Z. (1999). Aphid-parasitoids – hymerparasitoids relation berween cereal and lucerne agroecosystems in Serbia. *Contributions to the Zoogeography and Ecology of the Eastern Mediterranean Region*. *1* (suppl.), 51-56.

Vasić, K. (1958). Parazitske Hymenoptera gubara. *Zaštita bilja*, *41-42*, 17-21. Beograd.

Vasić, K., & Salatić, S**.** (1959). Novi prilog poznavanju parazitskih Hymenoptera gubara. Parazitske Hymenoptera gubara u 1958. godini. *Zaštita bilja*, *52-53*, 45-50. Beograd.

Vasić, K., & Sisojević, P. (1958). Paraziti pronimfi i lutaka gubara u Jugoslaviji 1957. godine. *Zaštita bilja*, *41-42*, 49-52. Beograd.

Vasić. K., Živojinović, D., & Mihajlović, Lj. (1975). Endoparaziti zimujućih gusenica borovog savijača- *Rhyacionia buoliana* Schiff. (Lepidoptera, Tortricidae) i njihov redukcioni značaj na Deliblatskom pesku 1975. *Deliblatski pesak*. Jugoslovenski poljoprivredni šumarski centar - Šumsko-industrijski kombinat *Zbornik radova*, *3*, 5-16. Beograd.

Vukasović, P. (1928). Prilog poznavanju entomofagnih insekata parazita. *Glas srpske kraljevske akademije, 131*, 45-72.

Vukasović, P. (1931). O značaju hiperparazita u životnim zajednicama insekata. *Glasnik Jugoslovenskog entomološkog društva,* 5-6, 94-97. Beograd.

ВРСТЕ CHALCIDOIDEA (INSECTA: HYMENOPTERA) НА ДРВЕНАСТОЈ ПЕЊАЧИЦИ *CAMPSIS RADICANS* (L.) SEEM. EX BUREAU

Љубодраг Михајловић

Извод

Дрвенаста пењачица *Campsis radicans* поседује екстрафлоралне нектарије на чашичним листићима и петељкама цветова и зеленим плодовима. Њихов нектар привлачи бројне опнокрилце (Insecta: Hymenoptera), а посебно представнике надфамилије Chalcidoidea. Током шестогодишњих истраживања (2012–2017), у перидоу од јула до средине октобра прикупљено је укупно 2117 примерака Chalcidoidea из 13 фамилија: Aphelinidae, Chalcididae, Encyrtidae, Eulophidae, Eupelmidae, Eurytomidae, Leucospidae, Mymaridae, Ormyridae, Perilampidae, Pteromalidae, Torymidae и Trichogrammatidae. Укупно је детерминисано 116 врста од којих су 63 врсте нове за фауну Србије. То су: *Antrocephalus hypsopygiae* Masi, 1928, *Brachymeria moerens* (Ruschka, 1922), *Brachymeria vitripennis* (Forster, 1859), *Dirhinus hesperidum* (Rossi, 1790), *Neohybothorax hetera* (Walker, 1834), *Proconura nigripes* (Fonscolombe, 1832), *Psilochalcis subarmata* (Forster,1855), *Psilochalcis ligustica* (Masi, 1929) (Fam. Chalcididae), *Cheiloneurus boldyrevi* Trjapitzin & Agekyan, 1978, *Discodes coccophagus* (Ratzeburg, 1848), *Homalotylus platynaspidis* Hoffer, 1963, *Leptomastix flava* Mercet, 1921, *Paratetracnemoidea malenotti* (Mercet, 1918) (Fam. Encyrtidae), *Allocerastichus doderi* Masi, 1924, *Euderus agrili* Bouček, 1963, *Microlycus heterocerus* Thomson 1878, *Necremnus hungaricus* (Erdos 1951), *Platyplectrus laeviscuta* (Thomson 1878), *Metaplectrus szepligetii* (Erdös, 1951), *Pnigalio xerophilus* (Erdös, 1954), *Elasmus anius* Walker, 1846, *Elasmus biroi* Erdös, 1964, *Elasmus rufiventris* Ferriere, 1947, *Elasmus steffani* Viggiani, 1967, *Elasmus unicolor* Rondani, 1877 (Fam. Eulophidae), *Anastatus catalonicus* Bolivar y Pieltain, 1935, *Calosota aestivalis* Curtis, 1836, *Eusandalum merceti* (Bolivar y Pieltain, 1926) (Fam. Eupelmidae), *Aximopsis nodularis* (Boheman, 1836), *Bruchophagus kelebiana* (Erdös, 1957), *Eurytoma afra* Boheman, 1836, *Eurytoma appendigaster* (Swederus, 1795), *Eurytoma arctica* Thomson, 1876, *Eurytoma collaris* Walker, 1832, *Eurytoma cynipsea* Boheman, 1836, *Eurytoma gyorfii* Erdös, 1957, *Eurytoma palustris* Erdos, 1957, *Eurytoma strigifrons* Thomson, 1876, *Eurytoma tilicola* Hedqvist, 1966, *Sycophila flavicollis* Walker 1834 (Fam. Eurytomidae), *Ooctonus novickyi* Soyka, 1950 (Fam. Mymaridae), *Perilampus intermedius* Bouček, 1956, *Perilampus masculinus* Bouček, 1956 (Fam. Perilampidae), *Agrilocida ferrieri* Steffan,1964, *Dinarmus acutus* Thomson, 1878, *Eulonchetron torymoides* (Thomson, 1878), *Homoporus luniger* (Nees, 1834), *Pachyneuron nelsoni* Girault, 1928., *Pachyneuron solitarium* (Hartig, 1838), *Plutothr09. trifasciata* Thomson, 1878., *Rhopalicus quadratus* (Ratzeburg, 1844), *Rohatina monstrosa* Bouček, 1954., *Sphegigaster nigricornis* (Nees, 1834), *Systasis annulipes* (Walker, 1834) (Fam. Pteromalidae), *Glyphomerus tibialis* Forster, 1956, *Exopristus trigonomerus* (Masi, 1916), *Monodontomerus obscurus* Westwood, 1833, *Torymus armatus* Boheman, 1834, *Torymus cupreus* (Spinola, 1808), *Torymus cyaneus* Walker, 1847 f. *lazulinus* Fodster, 1859. (Fam. Torymidae) и *Ufens dilativena* Nowicki, 1940 (Fam. Trichogrammatidae). За фауну Балканског полуострва нових је 11 врста: *N. hetera* (Chalcididae), A*. doderi, M. heterocerus, N. hungaricus, P. szepligetii, E. biroi* (Eulophidae), *B. kelebiana* (Eurytomidae), *P. masculinus* (Perilampidae), A*. ferierii, R. quadratus* (Pteromalidae) и *T. cyaneus* f. *lazulinus* Fodster, 1859 (Torymidae). Интересантно је да се неке врсте Chalcidoidea веома ретко могу ухватити на биљци *C. radicans* методом кошења. На пример врста *Antrocephalus hypsopygiae* Masi (Chalcididae) је на Балканском полуострву позната само

по једном примерку из Хрватске. Током наших истраживања ухваћено је укупно 486 примерака женки и мужјака. Посебно је интересантан налаз врсте *Agrilocida ferrieri* Steffan,1964 (Pteromalidae) која је до сада у Европи била позната само из јужне Француске. Током наших истраживања ухваћено је 7 примерака мужјака и женки. Врсте: *Bruchophagus kelebiana* (Erdös, 1957) (Eurytomidae), *Metaplectrus szepligetii* (Erdös, 1951) и *Elasmus biroi* Erdös, 1964 (Eulophidae) су биле познате само из Мађарске, а ми смо их забележили у Србији, те представљају нове врсте за фауну Балканског полуострва. На основу података из литературе, од детерминисаних врста, за 13 врста до сада нису познати домаћини. Од примарних паразитоида најбројнији су паразитоиди дефолијатора (укупно 22 врсте), затим галаша (18), ксилофага (17) лисних минера (10) и широких полифага (8). Секундарних паразитоида је констатовано укупно 19 врста, међутим, они су такође и примарни паразитоиди. *C. radicans* се може сматрати „мамац биљком" која привлачи многе групе Hymenoptera, што је веома значајно за проучавање фауне ових група, а посебно за готово све фамилије надфамилије Chalcidoidea. Значај *C. radicans* је и у томе што се екстрафлоралним нектаром хране бројни представници Chalcidoidea у периоду када у природи готово да нема друге хране. С обзиром да су готово све констатоване врсте Chalcidoidea природни непријатељи других инсеката (најчешће фитофагних), *C. radicans* на индиректан начин обезбеђује природну равнотежу у различитим копненим екосистемима.

Received: May 24th, 2018
Accepted: October 8th, 2018