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# CONTRIBUTION TO KNOWLEDGE OF THE CYNIPID GALL WASP (HYMENOPTERA: CYNIPIDAE) FAUNA OF MT. RTANJ (SERBIA)

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## Abstract

Cynipid gall wasps on Mount Rtanj were faunistically investigated during the period from 2012 to 2015. In the course of these investigations, a total of 30 species were recorded, belonging to two tribes (Cynipini and Diplolepidini) and eight genera (*Andricus*, 19 species; *Cynips*, 3; *Diplolepis*, 2; *Neuroterus*, 2; *Aphelonyx*, 1; *Dryocosmus*, 1; *Biorhiza*, 1 and *Pseudoneuroterus*, 1). For all of the recorded species, the localities, dates and hosts on which they were found on Mt. Rtanj are given.

KEY WORDS: cynipid gall wasps, fauna, Mt. Rtanj, Serbia, *Quercus*, *Rosa*

## Introduction

The cynipid gall wasps remain an inadequately investigated group of insects in Serbia. Sixty-nine species have been recorded to date (Marković, 2014). In order to identify the nearly 30 more expected species, these insects have been the subject of intensive faunistic investigations in Serbia in recent years. Since these studies yielded a considerable abundance of new facts about the group, we decided to publish them through a series of papers devoted to the fauna of cynipid gall wasps of separate mountains or regions in Serbia. Some of the obtained data have already been published (Marković, 2014). Data obtained in investigating the cynipid gall wasp fauna of Mt. Rtanj are presented in this paper.

## Material and Methods

The fauna of cynipid gall wasps of Mt. Rtanj was investigated during the period 2012 to 2015 at a total of six localities: Ilino (43°46' N, 21°57' E), Mužinac (43°42' N, 21°51' E), Nikolinac (43°41' N, 21°55' E), Rtanj (43°48' N, 21°53' E), Šarbanovac (43°41' N, 21°53' E) and Vrndža (43°43' N, 21°49' E). The galls of different species of cynipid gall wasps were collected at the localities during the summer and autumn seasons. After being brought to the Laboratory of Entomology of Belgrade University's Faculty of Forestry, a smaller number of collected galls were herbarized, identified and deposited in the herbarium of zoocecidia of the Forestry Faculty's Department of Forest Protection. Another batch of galls was put in photoeclectors in order to obtain imagoes. During the period of flight of cynipid gall wasp imagoes, the photoeclectors were inspected daily and the emerging imagoes were collected, killed with ether and mounted.

All of the obtained imagoes of cynipid gall wasps are housed in the insect collection of the Department of Forest Protection.

The collected galls and imagoes obtained were identified by Č. Marković and A. Stojanović using published works of Ionescu (1957), Eady & Quinlan (1963), Ambrus (1974), Zerova *et al.* (1988), Csóka *et al.* (2005), Melika (2006a, b), Ács *et al.* (2007) and Melika *et al.* (2000, 2010).

## Results and Discussion

Among the studied examples of cynipid gall wasps collected on Mt. Rtanj, we established the presence of 30 species belonging to two tribes (Cynipini, 28 species; and Diplolepidini, 2 species) and eight genera (*Andricus*, 19 species; *Cynips*, 3; *Diplolepis*, 2; *Neuroterus*, 2; *Aphelonyx*, 1; *Dryocosmus*, 1; *Biorhiza*, 1 and *Pseudoneuroterus*, 1).

All of the species of cynipid gall wasps found on Mt. Rtanj were previously recorded in Serbia (Langhoffer, 1915; Baudyš, 1928; Pal, 1983a, b; Mihajlović & Marković, 2003; Glavendekić & Mihajlović, 2004; Marković & Stojanović, 2007, 2009; Marković, 2014). Faunistically speaking, these are mostly species that are not only common in Serbia, but also widely distributed in oak forests elsewhere in Europe (Ionescu, 1957; Eady & Quinlan, 1963; Ambrus, 1974; Zerova *et al.*, 1988; Melika, 2006a, b; Kwast, 2012). Among them the most species were found on *Quercus petraea* (15 species), *Q. pubescens* (15) and *Q. frainetto* (12). They were represented to a much lesser extent on *Q. cerris* (5 species) and *Rosa* spp. (2).

According to the data of Baudyš (1928) and Glavendekić & Mihajlović (2004), only 17 species of cynipid gall wasps had been recorded in Eastern Serbia prior to our investigations. In the course of our work on Mt. Rtanj, 22 species were found that were new for the fauna of cynipid gall wasps in this part of Serbia. However, since oak forests are widely distributed in eastern Serbia and cynipid gall wasps are for the most part trophically linked to them (Csóka *et al.*, 2005), it is certain that many other new species of these insects will be found there in the future. We estimate that only around 30 to 35% of the expected number of species have been found to date.

Apart from Mt. Rtanj, cynipid gall wasps have been investigated in somewhat greater detail only on Mt. Jastrebac (central Serbia) (Marković, 2014). Since the same species of oaks are present on these two mountains, they can be faunistically compared as far as cynipid gall wasps are concerned. On the basis of

the results obtained to date, it can be asserted that no great differences exist between these mountains with respect to cynipid gall wasp fauna, i.e., it is mostly composed of the same species on both of them.

All of the species of cynipid gall wasps found on Mt. Rtanj are mentioned in the list that follows. The localities, dates and food plants on which individual species of cynipid gall wasps were recorded on Mt. Rtanj are given, together with the number of obtained imagoes and the generation (sexual or asexual) of galls discovered. The names given for individual species of cynipid gall wasps in this list correspond to the names for this group of insects given on the Fauna Europaea site (Mitroiu, 2013).

List of Recorded Species of Cynipid Gall Wasps

Tribe Cynipini

*Andricus amblycerus* (Giraud, 1859)

Asexual generation bud galls: Nikolinac 14.8.2013. *Q. frainetto*, Mužinac 26.7.2015. *Q. pubescens*.

*A. caliciformis* (Giraud, 1859)

Asexual generation bud galls: Ilino 21.9.2012., 23.7.2013. *Q. frainetto*, 23.7.2015. *Q. petraea*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. pubescens*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. callidoma* (Hartig, 1841)

Asexual generation bud galls: Nikolinac 14.8.2013. *Q. pubescens*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. caputmedusae* (Hartig, 1843)

Asexual generation galls on the acorn: Ilino 21.9.2012. *Q. frainetto*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. frainetto*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. coriarius* (Hartig, 1843)

Asexual generation bud galls: Ilino 21.9.2012. *Q. frainetto*, *Q. petraea*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. coronatus* (Giraud, 1859)

Asexual generation bud galls: Ilino 21.9.2012., 23.7.2013. *Q. frainetto*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. frainetto*, *Q. pubescens*, *Q. petraea*, Rtanj 4.10.2013. *Q. petraea*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. curvator* Hartig, 1840

Sexual generation galls on leaves: Ilino 21.9.2012., 23.7.2015. *Q. petraea*.

*A. cydoniae* Giraud, 1859

Sexual generation gall on tip of twig: Mužinac 26.7.2015. *Q. cerris*.

*A. glutinosus* (Giraud, 1859)

Asexual generation bud galls: Ilino 21.9.2012. *Q. petraea*.

*A. hartigi* (Hartig, 1843)

Asexual generation bud galls: Ilino 21.9.2012. *Q. frainetto*, Nikolinac 14.8.2013. *Q. frainetto*, *Q. petraea*.

*A. lignicolus* (Hartig, 1840)

Asexual generation bud galls: Ilino 21.9.2012., 23.7.2015. *Q. petraea*, Rtanj 4.10.2013. *Q. petraea*.

*A. lucidus* (Hartig, 1843)

Asexual generation bud galls: Ilino 21.9.2012. *Q. frainetto*, Nikolinac 14.8.2013. *Q. petraea*, *Q. pubescens*, *Q. frainetto*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. mitratus* (Mayr, 1870)

Asexual generation bud gall: Ilino 21.9.2012. *Q. petraea*.

*A. multiplicatus* Giraud 1859

Sexual generation bud galls: Ilino 21.9.2012., 23.7.2015. *Q. cerris*, Mužinac 26.7.2015. *Q. cerris*, Šarbanovac 26.7.2015. *Q. cerris*, Vrndža 22.10.2014. *Q. cerris*.

*A. polycerus* (Giraud, 1859)

Asexual generation bud gall: Vrndža 22.10.2014. *Q. pubescens*.

*A. quercustozae* (Bosc, 1792)

Asexual generation bud galls: Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. pubescens*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*A. seckendorffi* (Wachtl, 1879)

Asexual generation galls on acorn cups: Vrndža 22.10.2014. *Q. pubescens*.

*A. solitarius* (Fonscolombe, 1832)

Asexual generation bud galls: Ilino 21.9.2012. *Q. petraea*, Nikolinac 14.8.2013. *Q. pubescens*.

*A. truncicola* (Giraud, 1859)

Asexual generation bud gall: Ilino 23.7.2015. *Q. petraea*.

*Aphelonyx cerricola* (Giraud, 1859)

Imagoes of asexual generation: Vrndža 22.10.2014. *Q. cerris* (3 ♀).

Asexual generation bud galls: Ilino 21.9.2012., 23.7.2015. *Q. cerris*, Mužinac 26.7.2015. *Q. cerris*, Nikolinac 14.8.2013. *Q. cerris*, Šarbanovac 26.7.2015. *Q. cerris*, Vrndža 22.10.2014. *Q. cerris.*

*Biorhiza pallida* (Olivier, 1791)

Sexual generation galls at the end of shoots: Ilino 21.9.2012. *Q. petraea*, Nikolinac 14.8.2013. *Q. frainetto*, *Q. petraea.*

*Cynips cornifex* Hartig, 1843

Asexual generation galls on leaves: Nikolinac 14.8.2013. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*, Šarbanovac 26.7.2015. *Q. pubescens*.

*C. quercus* (Fourcroy, 1785)

Asexual generation galls on leaves: Ilino 21.9.2012. *Q. frainetto*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. frainetto*, *Q. pubescens*, *Q. petraea*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*C. quercusfolii* Linnaeus, 1758

Asexual generation galls on leaves: Ilino 21.9.2012. *Q. frainetto*.

*Dryocosmus cerriphilus* Giraud, 1859

Sexual generation galls on leaves: Nikolinac 14.8.2013. *Q. cerris*.

Asexual generation galls on twigs: Ilino 23.7.2015. *Q. cerris*, Nikolinac 14.8.2013. *Q. cerris*.

*Neuroterus anthracinus* (Curtis, 1838)

Asexual generation galls on leaves: Ilino 21.9.2012., 23.7.2013., 23.7.2015. *Q. petraea*, 23.7.2013. *Q. frainetto*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. petraea*, *Q. pubescens*, Šarbanovac 26.7.2015. *Q. pubescens*, Vrndža 22.10.2014. *Q. pubescens*.

*N. quercusbaccarum* (Linnaeus, 1758)

Sexual generation galls on catkins and leaves: Šarbanovac 26.7.2015. *Q. pubescens*.

Asexual generations galls on leaves: Ilino 21.9.2012. *Q. frainetto*, *Q. petraea*, Mužinac 26.7.2015. *Q. pubescens*, Nikolinac 14.8.2013. *Q. frainetto*, *Q. pubescens*.

*Pseudoneuroterus macropterus* (Hartig, 1843)

Asexual generation galls on shoots: Ilino 21.9.2012., 23.7.2015. *Q. cerris*, Nikolinac 14.8.2013. *Q. cerris*, Šarbanovac 26.7.2015. *Q. cerris*.

Tribe Diplolepidini

*Diplolepis eglanteriae* (Hartig, 1840)

Galls on leaves: Mužinac 26.7.2015. *Rosa* sp., Rtanj 23.7.2015. *Rosa* sp.

*D. rosae* (Linnaeus, 1758)

Galls on leaf buds and young shoots: Ilino 23.7.2013. *Rosa* sp., Mužinac 26.7.2015. *Rosa* sp., Nikolinac 14.8.2013. *Rosa* sp., Rtanj, 4.10.2013., 23.7.2015 *Rosa* sp., Šarbanovac 26.7.2015. *Rosa* sp., Vrndža 22.10.2014. *Rosa* sp.

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# ПРИЛОГ ПОЗНАВАЊУ ФАУНЕ ГАЛИКОЛНИХ CYNIPIDAE (HYMENOPTERA: CYNIPOIDEA) ПЛАНИНЕ РТАЊ (СРБИЈА)

ЧЕДОМИР МАРКОВИЋ

## Извод

Од 2012. до 2015. године на планини Ртањ галиколне Cynipidae су фаунистички истраживане. Током тих истраживања констатовано је 30 врста из 2 трибуса (Cynipini и Diplolepidini) и 8 родова (*Andricus* 19, *Cynips* 3, *Diplolepis* 2, *Neuroterus* 2, *Aphelonyx* 1, *Dryocosmus* 1, *Biorhiza* 1, *Pseudoneuroterus* 1). За све пронађене врсте у раду су наведени локалитети, датуми и домаћини на којима су оне утврђене.

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