

A CONTRIBUTION TO THE FAUNA OF CYNIPIDAE (INSECTA, HYMENOPTERA, CYNIPIDAE) OF CROATIA WITH A DESCRIPTION OF AN ASEXUAL FEMALE OF *ANDRICUS KORLEVICI* (KIEFFER, 1902) NOV. COMB.

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This publication is a contribution to the knowledge of gall wasp fauna of the Republic of Croatia. In all, 17 genera with 87 species were recorded in Croatia, particularly in the north-western part of the republic with Istria peninsula during the period of 1997–2009. Some species are new for the Republic of Croatia. Localities, record date, synonyms and host plants are given for all species. The list is based on material collected solely by the author. An asexual female of the rare species *Andricus korlevici* is described. The species has been transferred to another genus.

Key words: Hymenoptera, gall wasps, fauna, description of an asexual female, Croatia

Kwast, E.: Prilog poznavanju faune osa šiškarica (Insecta, Hymenoptera, Cynipidae) Hrvatske, s opisom nespolne ženke vrste *Andricus korlevici* (Kieffer, 1902) nov. comb. Nat. Croat., Vol. 21, No 1, 223–245, 2012, Zagreb.

Ovaj rad je doprinos poznavanju faune osa šiškarica Hrvatske. Ukupno je u razdoblju 1997.–2009. u Hrvatskoj zabilježeno 17 rodova s 87 vrsta, prije svega u sjeverozapadnom dijelu zemlje te Istri. Neke vrste se spominju prvi puta za Hrvatsku. Za sve vrste navode se podaci o nalazištima, datumima nalaska, sinonimima i biljkama domaćinima. Popis se temelji isključivo na materijalu kojeg je prikupio autor. U radu se opisuje i nespolna ženka rijetke vrste *Andricus korlevici*, a vrsta se premješta u drugi rod.

Ključne riječi: Hymenoptera, ose šiškarice, fauna, opis nespolne ženke, Hrvatska

INTRODUCTION

The first data on gall wasps for Croatia were given by KORLEVIĆ, 1890; MOCSARY, 1897; LANGHOFFER, 1915; later JAAP, 1919/20; BAUDYS, 1928, 1941; MEHES, 1939, as well as authors with several items of information relating to fauna. Almost no records of gall wasps were published recently. The knowledge of Cynipidae – a family of the Hymenoptera in the superfamily Cynipoidea – had expanded seriously in the last 20 years. This concerns above all the findings and the descriptions of new species, the taxonomy, the phylogenetic relationships, parasites and inquilines as well as the biology of some species (NIEVES-ALDREY, 1994; MELIKA & BECHTOLD, 2001; COOK *et al.*, 2002; NIEVES-ALDREY *et al.*, 2005; ABE *et al.*, 2007; STONE *et al.*, 2008). The galls of Cynipidae are, like other plant galls, are abnormal growths caused by an alien organism. Galls develop on all parts of plants – roots, stems,

leaves, axillary and terminal buds, flowers and fruits. The family includes species forming galls on different host plants as well as inquilines. Worldwide, around 1300 species (ABE *et al.*, 2007) are known, and in Central Europe about 200 species. The distribution of gall wasps has been little or not all investigated in Croatia in recent decades. This paper will provide a contribution to knowledge of the fauna of the gall wasps of Croatia.

MATERIAL AND METHODS

In the time from 1997 to 2009 seven excursions were carried by the author for the examination of the gall wasp fauna of Croatia. The tours were made at different times and often for only a few days. The times involved were: 14–20 June 1997; 28 May to 2 June 2000; 22/23 September 2002; 13–26 July 2004; 15/16 September 2004; 2–5 July 2008 as well as 9–17 September 2009.

The occurrence and distribution of gall wasps were ascertained by a uniform method. The galls were collected on host plants in various biotopes. All records at each locality were registered together with the host plant. Most of the species were brought back in developed galls for the breeding of the gall-causing organism or inquilines. Emergence data are mentioned in the succeeding text only in special cases.

In the presentation of gall wasp species exclusively the author's own investigations have been taken into consideration, without any reference being made to the literature or museum collections.

The determination of galls and gall wasps is based on the currently valid nomenclature. In the annotated list only the synonyms names of species were listed in the older Croatian literature are given. Similarly, the only host plants listed in the text are those in which the present author actually found galls.

Localities examined

The examined localities are arranged in geographical regions of the Republic of Croatia (Fig. 1). The investigated points are located in following counties of Croatia:

Istria:	Baderna, Brajkovići, Buje, Cerovlje, Dolenja Vas, Farini, Gračisce, Hreljići, Kaštel, Kaštelir, Kotli, Krasica, Kruncići, Labin, Lobarika, Marcani, Melnica, Motovun, Plominsko Zagorje, Škropeti, Šterna, Šušnjeвица, Tar, Tinjan, Umag, Vela Traba, Višnjana, Vižinada, Vozilići, Vrsar, Zajci
Primorje – Gorski Kotar:	Omišalj (Isle of Krk), Učka Mountains, Veprinac, Vodice (Isle of Cres)
Karlovac:	Ogulin/Bjelsko, Rakovica, Vojnovac
Zagreb:	Popovec, Soblinec
Sisak – Moslavina:	Peščenica, Šatornja, Veleševac
Bjelovar – Bilogora:	Garešnica
Varaždin:	Breznički Hum
Međimurje:	Goričan
Lika – Senj:	Gornji Vaganac, Plitvice Lakes National Park, Zalužnica

Šibenik – Knin: Šibenik
 Split – Dalmatia: Kučiće, Split
 Dubrovnik – Neretva: Zaton Doli

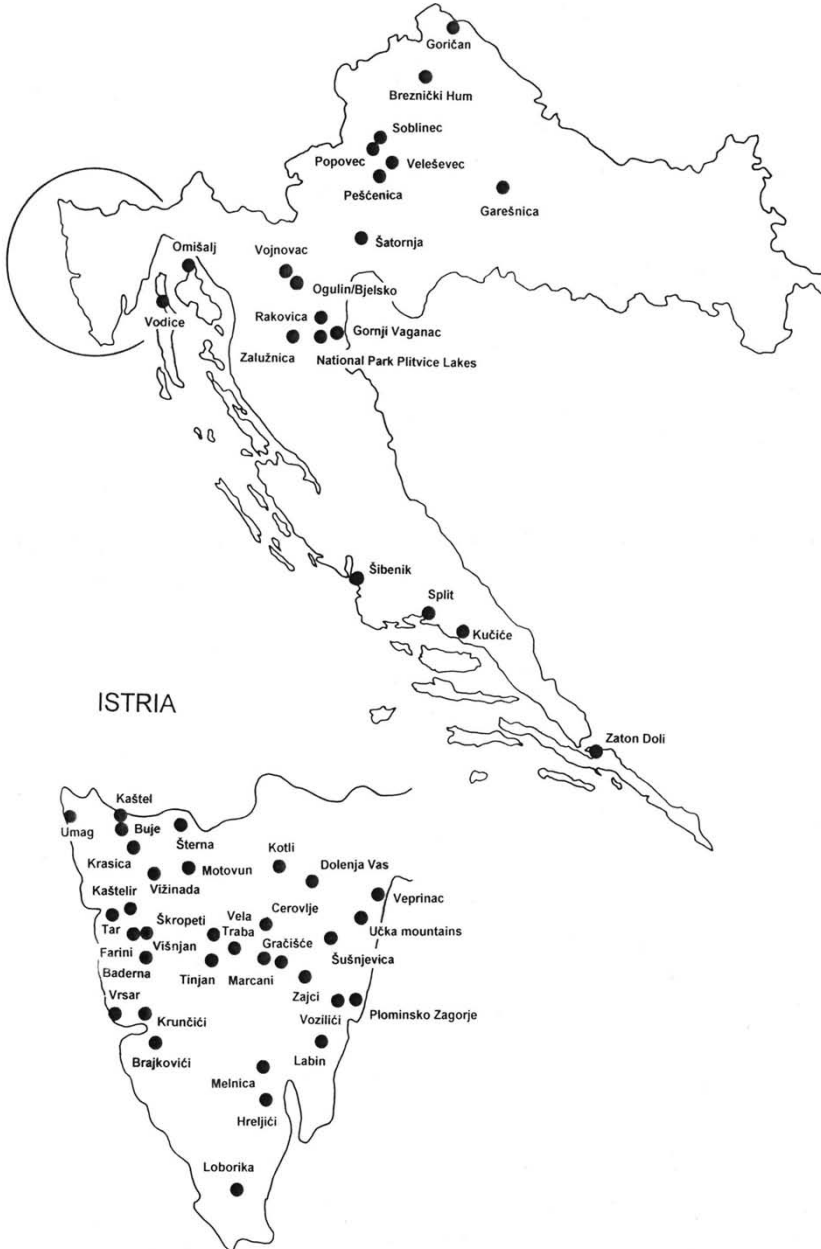


Fig. 1. The territory of the Republic of Croatia with 53 localities where the investigations of gall wasp fauna were carried out.

RESULTS

Annotated list of species

AYLACINI

Aylax papaveris (Perris, 1840)

Synonym: *Cynips rhoeadis* Bouché, 1834; *Aylax rhoeadis* (Bouché): Hartig, 1840; *Diplolepis papaveris* Perris, 1840

Host plant: In swollen seed capsules of *Papaver rhoeas*.

Localities: Sporadic on the edge of the way near Tar (31.V.2000) and Kaštelir (15.IX.2004).

Barbotinia oraniensis (Barbotin, 1964)

Synonym: *Aylax oraniensis* Barbotin, 1964

Host plant: In swollen seed capsules of *Papaver rhoeas*.

Locality: This Circum-Mediterranean gall wasp was found in Kaštelir (15.IX. 2004). The record is new for the fauna of Croatia.

Phanacis hypochoeridis (Kieffer, 1887)

Synonym: *Aulax hypochoeridis* Kieffer, 1887; *Phanacis seriolae* Stefani, 1903

Host plant: In irregular swollen stems of *Hypochoeris radicata*.

Locality: Only one time, the species was found in Melnica (4.VII.2008) with four galls.

DIPLOLEPIDINI

Diplolepis eglanteriae auct.

Only young galls were found and it was not clear whether *Diplolepis eglanteria* (Hartig, 1840) or *Diplolepis centifoliae* (Hartig, 1840) was concerned. No cultivation of the wasps was possible to determine beyond all doubt the species of gall wasp.

Host plant: Found on leaves of *Rosa* spec.

Localities: Motovun (31.V.2000), Dolenja Vas (1.VI.2000), Krasica (2.VI.2000), Buje (15.IX. 2004), Učka Mountains (15.IX.2009) and Baderna (17.IX.2009).

Diplolepis rosae (Linnaeus, 1758)

Synonyms: *Cynips rosae* Linnaeus, 1758; *Rhodites rosae* Hartig, 1840; *Diplolepis bedeguaris* Fourcroy, 1785

Host plants: Galls on leaf buds and young shoots of *Rosa canina* and other *Rosa*-species.

Localities: The species is widespread and common in the area. Localities were Veleševac (15.VI.1997), Hreljići (17.VI.1997), Zajci (17.VI.1997), Motovun (20.VI.1997, 31.V.2000), near Rakovica (29.V.2000; 22.IX.2002; 19.VII.2004), near Tar (30.V. 2000; 23.IX.2002; 15.IX.2004; 5.VII.2008; 14.IX.2009), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), Krasica (2.VI.2000), Krunčić (2.VI.2000), Zalužnica (23.IX.2002), Soblinec (22.IX.2002), Umag (13.VII.2004), National Park Plitvice Lakes (20.VII.2004), Gornji Vaganac (20.VII.2004), Kučice (23.VII.2004), Zaton Doli (24.VII.2004), Popovec (26.VII.2004), Buje (15.IX.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004), Baderna (4.VII.2008; 17.IX.2009), Melnica (4.VII. 2008; 10.IX.2009), Brajkovići (9.IX.2009), Višnjani (11.IX.2009) and Cerovlje (12.IX. 2009).

Diplolepis nervosa (Curtis, 1838)

Synonyms: *Cynips nervosa* Curtis, 1838; *Rhodites rosarum* Giraud, 1859; *Rhodites kiefferi* Loisele, 1912; *Rhodites dispar* Niblett, 1943

Host plant: Found on leaves of *Rosa* spec.

Localities: Only on two localities in Istria, near Motovun (31.V.2000) and Krasica (2.VI.2000).

***Diplolepis spinosissimae* (Giraud, 1859)**

Synonym: *Rhodites spinosissimae* Giraud, 1859

Host plant: Galls were found on leaves of *Rosa* spec.

Localities: The species was found sporadically near Tar (30.V.2000), Vozilići (1.VI.2000) and Krunčići (2.VI.2000), Umag (13.VII.2004), Gračiče (14.VII.2004), near Rakovica (19.VII.2004), Baderna (4.VII.2008) and one gall in Učka Mountains (15.IX.2009).

***Diplolepis mayri* (Schlechtendal, 1877)**

Synonym: *Rhodites mayri* Schlechtendal, 1877

Host plant: On stems of *Rosa* spec.

Localities: The species was found in near Tar, an old gall (23.IX.2002), Umag (18.VII.2004; 16.IX.2004), Buje (15.IX.2004), Višnjan (11.IX.2009) and Baderna (17.IX.2009).

PEDIASPIDINI

***Pediaspis aceris* (Gmelin, 1790)**

Synonym: *Cynips aceris* Gmelin, 1790; *Cynips pseudoplatani* Mayer, 1779; *Pediaspis sorbi* Tischbein, 1852

Host plant: Sexual generation galls on leaves of *Acer pseudoplatanus*.

Localities: Galls were found on a small shrub in the Plitvice Lakes National Park (20.VII.2004) and on adult trees in Ogulin/Bjelsko (2.VII.2008). The galls were very frequent at the last locality.

SYNERGINI

***Periclistus brandti* (Ratzeburg, 1833)**

Synonym: *Cynips brandti* Ratzeburg, 1833

Host galls/ Some wasps emerged on 2.VI.2003 out galls of *Diplolepis rosae* (near Tar;

Locality: 23.IX.2002).

***Ceroptres cerri* Mayr, 1872**

Synonyms: *Ceroptres cerriphilus* Giraud in Houard, 1911; *Ceroptres vitripennis* Giraud in Houard, 1911

Host gall/ 5 females emerged on 2.V.2003 out a gall of *Pseudoneuroterus macropterus*

Locality: (near Tar; 23.IX.2002).

***Synergus flavipes* Hartig, 1843**

Host galls/ 3 males emerged on 7.V.2003 out a gall of *Pseudoneuroterus macropterus*

Locality: (near Tar; 23.IX.2002).

***Synergus gallaepomiformis* (Boyer de Fonscolombe, 1832)**

Synonyms: *Synergus fascialis* Hartig, 1840; *Synergus vulgaris* Hartig, 1840; *Synergus bispinus* Hartig, 1841; *Synergus erythrocerus* Hartig, 1841; *Synergus pomiformis* Kieffer, 1898; *Synergus maculatus* Tavares, 1920

Host galls/ 1 male and 4 female wasps emerged on 1.VI.2000 out of galls of sexual

Localities: generation of *Biorhiza pallida* (Rakovica; 29.V.2000), 5 females on 2.VI.2000 also out *Biorhiza pallida* galls (Dolenja Vas; 1.VI.2000) and 1 male and 2

female wasps on 28. VII. 2004 out of *Andricus fecundatrix* (Motovun; 14.VII.2004). 1 male and 2 females emerged also out galls of *Andricus fecundatrix* (Šterna; 16.IX.2004). 1 male and 1 female emerged on 19.VI.2005 out galls of *Andricus polycerus* (near Tar; 15.IX.2004). In 2008 1 male and 3 females emerged out of galls of *Andricus callidoma* on 16.VII, (Motovun; 5.VII.2008) and 5 females of *Andricus solitarius* on 20.VII. (near Tar; 5.VII.2008). 3 females emerged out of galls of *Andricus gallaeurnaeformis* on 29.V.2009 (Baderna; 4.VII.2008), 6 females out galls of *Andricus lucidus* on 10.VI.2010 (Loborika; 10.IX. 2009) and 2 females out of galls of *Andricus korlevici* on 26.V.2010 (Vela Traba; 12.IX.2009).

***Synergus hayneanus* (Ratzeburg, 1833)**

Synonyms: *Cynips hayneanus* Ratzeburg, 1833; *Synergus rugulosus* Hartig, 1841; *Synergus scaber* Hartig, 1856

Host galls/ 8 female wasps emerged from 11 to 15.VI.2000 out of *Andricus dentimitratus*

Localities: galls (Rakovica; 29.V.2000). From 27.V. to 4.VI.2005 some wasps emerged out of *Andricus polycerus* (near Tar; 15.09.2004) 2 males and 5 females, also on 27.V.2005 out of galls of *Andricus stefanii* (near Tar; 15.IX.2004) 1 male and 1 female. 12 female wasps emerged on 16./17. VI.2005 out of one *Andricus seckendorffi* gall (near Tar; 15.IX.2004). 3 females emerged out galls of *Andricus korlevici* on 20.VI.2010 (Višnja; 11.IX.2009).

***Synergus pallicornis* Hartig, 1841**

Synonyms: *Synergus pallidicornis* Dalla Torre, 1893; *Synergus australis* Hartig, 1843

Host galls/ The wasps, 2 males and 2 females, emerged from 19. to 23.IV.2005 out of asexual generation galls

Localities: of *Cynips longiventris* (Motovun; 16.XI.2004). On 2.VI.2005 some females emerged out of asexual generation galls of *Andricus kollari* (Šterna; 16.IX.2004).

***Synergus pallipes* Hartig, 1840**

Synonyms: *Synergus albipes* Hartig, 1841; *Synergus tristis* Mayr, 1872; *Synergus tscheki* Mayr, 1872; *Synergus varius* Hartig, 1841

Host gall/ Only one male emerged on 17.X.2004 out of an asexual generation gall.

Locality: *Neuroterus anthracinus* (Vižinada; 15.IX.2004).

***Synergus reinhardi* Mayr, 1872**

Host galls/ 2 male and 4 female wasps emerged on 19.VI.1997 out *Andricus kollari*

Localities: galls (Zajci; 17.VI.1997). 3 female wasps also emerged from 29.VI. to 6.VII.2000 out of *Andricus kollari* galls (Dolenja Vas; 1.VI.2000) as well as 2 males and 3 females on 26.VI.2005 (Šterna; 16.IX.2004).

***Synergus umbraculus* (Olivier, 1791)**

Synonyms: *Diplolepis umbraculus* Olivier, 1791; *Diplolepis gallaeumbraculatae* Anthoine, 1794; *Diplolepis rufipes* Boyer de Fonscolombe, 1832; *Synergus orientalis* Hartig, 1841; *Synergus socialis* Hartig, 1843; *Synergus melanopus* Hartig, 1843

Host galls/ 6 females emerged on 2.VI.2000 out of sexual generation galls of *Biorhiza*

Localities: *pallida* (Dolenja Vas; 1.VI.2000). 1 female wasp emerged on 10.V.2003 out an *Andricus coronatus* gall (near Tar; 23.IX.2002). Some wasps emerged on 22.V.2003 out of galls of *Andricus quercuscalicis* (Rakovica; 22.IX.2002) and *Andricus quercustozae* (near Tar; 23.IX.2002). On 19.IX.2004 3 females emerged out of a gall of *Andricus kollari* (near Tar; 15.IX.2004). 1 female emerged out of a gall of *Andricus seckendorffi* on 15.IV.2010 (Veprinac (15.IX.2009).

***Synophrus politus* Hartig, 1843**

As a result of new phylogenetic and taxonomic investigations the species belongs to the tribe Synergini (NIEVES-ALDREY, 2001). However inquiline species are not gall formers. In this case, which species does form the gall?

Host plant: Wooden galls on younger twigs on *Quercus cerris*.

Localities: Galls were found only in Istria near Tar (30.V.2000; 23.IX.2002), Umag (14.VII.2004), Gračišće (14.VII.2004), Brajkovići (9.IX.2009) and Cerovlje (12.IX.2009).

CYNIPINI

***Andricus amblycerus* (Giraud, 1859)**

Synonym: *Cynips amblycera* Giraud, 1859

Host plant: Bud galls on *Quercus pubescens*.

Localities: Galls were found only sporadically in Istria in Hreljići (17.VI.1997), Zajci (17.VI.1997), near Tar (30.V.2000; 5.VII.2008), Dolenja Vas (1.VI.2000; 23.IX.2002), Gračišće (14.VII.2004), Buje (15.IX.2004), Marcani (4.VII.2008), Šterna (5.VII.2008), Lobarika (10.IX.2009), Vela Traba (12.IX.2009) and Kaštel (13.IX.2009).

***Andricus aries* (Giraud, 1859)**

Synonym: *Cynips aries* Giraud, 1859

Host plant: Bud galls on *Quercus robur*.

Localities: Peščenica (15.VI.1997), Šatornja (28.V.2000), near Rakovica (29.V.2000; 22.IX.2002) and Motovun (16.IX.2004; 5.VII.2008; 11.IX.2009). All galls were already deserted.

***Andricus caliciformis* (Giraud, 1859)**

Synonym: *Cynips caliciformis* Giraud, 1859

Host plant: Bud galls on *Quercus pubescens*.

Localities: The species was found by Krasica (2.VI.2000), Buje (17.VII.2004), Marcani (4.VII.2008), near Tar (5.VII.2008) and Brajkovići (9.IX.2009).

***Andricus callidoma* (Hartig, 1841)**

Synonyms: Asexual generation: *Cynips callidoma* Hartig, 1841; sexual generation: *Andricus cirratus* Adler, 1881; *Andricus giraudi* Wachtl, 1882

Host plants: Bud galls only were found, asexual generation, on *Quercus pubescens*, *Quercus robur* and *Quercus petraea*.

Localities: The species was found only at four localities: in Veleševac (15.VI.1997), near Rakovica (19.VII.2004), Gornji Vaganac (20.VII.2004) and Motovun (5.VII.2008). At the last location four galls of the current year were collected on *Quercus robur*. From all galls, in the same summer only inquilines of *Synergus gallaepomiformis* emerged.

***Andricus caputmedusae* (Hartig, 1843)**

Synonym: *Cynips caput medusae* Hartig, 1843

Host plants: Galls on acorns of *Quercus pubescens* and once on *Quercus robur*.

Localities: The galls were found mainly in Istria. There the species is widespread. In the city of Labin (16.VI.1997), near Hreljići (17.VI.1997), Zajci (17.VI.1997), Plominsko Zagorje (17.VI.1997), near Tar (30.V.2000; 23.IX.2002; 14.VII.2004; 15.IX.2004; 5.VII.2008, 14.IX.2009), Škropeti (31.V.2000), near Vrsar (2.VI.2000), Krasica (2.VI.2000), Dolenja Vas (23.IX.2002), Zalužnica (23.IX.2002), Umag (13.VII.2004; 16.IX.2004; 3.VII.2008), Gračišće (14.VII.2004), Šibenik (21.VII.

2004), Vižinada (15.IX.2004), Šterna (16.IX.2004), Motovun (16.IX.2004 on *Q. robur*), Baderna (4.VII.2008), Brajkovići (9.IX.2009), Loborika (10.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009) and Farini (16.IX.2009).

***Andricus conglomeratus* (Giraud, 1859)**

Synonym: *Cynips conglomerata* Giraud, 1859

Host plant: Buds on shoots of *Quercus robur*.

Locality: Only one time, old galls were found in the vicinity of Rakovica (29.V.2000).

***Andricus conificus* (Hartig, 1843)**

Synonym: *Cynips conifica* Hartig, 1843

Host plants: The species was found only on *Quercus pubescens*.

Localities: All galls were deserted already. Zajci (17.VI.1997), Vodice (18.VI.1997), near Šušnjeвица (20.VI.1997), near Tar (30.V.2000; 23.IX.2002; 15.IX.2004), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), near Vrsar (2.VI.2000), Krasica (2.VI.2000), Umag (14.VII.2004; 16.IX.2004), Vižinada (15.IX.2004), Baderna (4.VII.2008), Melnica (4.VII.2008) and Loborika (10.IX.2009).

***Andricus coriarius* (Hartig, 1843)**

Synonym: *Cynips coriaria* Hartig, 1843

Host plants: Asexual generation induces bud galls on *Quercus robur* and *Quercus pubescens*.

Localities: In the north of Croatia, especially Istria, widespread. Galls were found by Peščenica (15.VI.1997), Plominsko Zagorje (17.VI.1997), Zajci (17.VI.1997), near Rakovica (29.V.2000), near Tar (30.V.2000; 23.IX.2002; 15.IX.2004), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), Vrsar (2.VI.2000), Krunčiči (2.VI.2000), Gračišće (14.VII.2004), Buje (17.VII.2004; 15.IX.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004; 5.VII.2008), near Umag (3.VII.2008), Tinjan (4.VII.2008), Marcani (4.VII.2008), Brajkovići (9.IX.2009), Loborika (10.IX.2009), Vela Traba (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009), Farini (16.IX.2009) and Baderna (17.IX.2009).

***Andricus coronatus* (Giraud, 1859)**

Synonyms: *Cynips glutinosa* forma *coronata* Giraud, 1859; *Cynips coronata* Kieffer, 1897–1901

Host plant: Bud galls on *Quercus pubescens*.

Localities: Galls were found in Plominsko Zagorje (17.VI.1997), near Hreljići (17.VI.1997), Zajci (17.VI.1997), Vodice (18.VI.1997), near Tar (30.V.2000; 23.IX.2002; 14.VII.2004; 15.IX.2004; 5.VII.2008), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), Šušnjeвица (1.VI.2000), Vrsar (2.VI.2000), Krunčiči (2.VI.2000), Krasica (2.VI.2000), Gračišće (14.VII.2004), Buje (15.IX.2004), Vižinada (15.IX.2004), Umag (16.IX.2004; 3.VII.2008), Baderna (4.VII.2008), Marcani (4.VII.2008), Brajkovići (9.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Veprinac (15.IX.2009), Farini (16.IX.2009) and Baderna (17.IX.2009).

***Andricus corruptrix* (Schlechtendal, 1870)**

Synonyms: Asexual generation: *Cynips corruptrix* Schlechtendal, 1870; *Cynips corruptrix* var. *ambigua* Trotter, 1899; *Cynips ambigua* Kieffer, 1897–1901

Host plant: Asexual generation bud galls on *Quercus robur*.

Locality: Only asexual generation galls were found, only once, near Rakovica (29.V.2000).

***Andricus curtisii* (Müller, 1870)**

Synonyms: *Cynips curtisii* Müller, 1870; *Cynips mediterranea* Trotter, 1901

Host plant: Bud galls on *Quercus pubescens*.

Locality: Five old galls were found in Zaton Doli (24.VII.2004).

***Andricus curvator* Hartig, 1840**

Synonym: Asexual generation: *Cynips collaris* Hartig, 1840

Host plants: Sexual generation with integral leaf galls on *Quercus robur* and *Quercus petraea*.

Localities: Only sexual generation galls were found in Peščenica (15.VI.1997), Soblinec (22.IX.2002), in the vicinity of Rakovica (19.VII.2004) and Motovun (5.VII.2008).

***Andricus cydoniae* Giraud, 1859**

Host plant: Galls were found on tips of twigs on *Quercus cerris*.

Localities: Plominsko Zagorje (16.VI.1997), Vodice (18.VI.1997), Gračišće (14.VII.2004), near Tar (14.IX.2009) and Vela Traba (12.IX.2009).

***Andricus dentimitratus* (Rejtö, 1887)**

Synonyms: *Diplolepis umbraculus* Olivier, 1791; *Cynips gallae-viscae* Fairmaire, 1882; *Cynips mayri* Kieffer, 1897; *Andricus viscosus* Nieves-Aldrey, 1985

Host plants: Acorn galls on *Quercus petraea* and *Quercus pubescens*.

Localities: Only in the vicinity of Rakovica (29.V.2000; 22.IX.2002; 19.VII.2004) and Zalužnica (23.IX.2002).

***Andricus fecundatrix* (Hartig, 1840)**

Synonyms: Asexual generation: *Cynips fecundatrix* Hartig, 1840; *Cynips gemmae* Schenck, 1863; sexual generation: *Andricus pilosus* Adler, 1881

Host plants: Only asexual generation galls were found on *Quercus robur* and *Quercus pubescens*.

Localities: Peščenica (14./15.VI.1997), Zajci (17.VI.1997), Motovun (20.VI.1997; 14.VII.2004; 16.IX.2004; 5.VII.2008; 11.IX.2009), near Rakovica (29.V.2000), Breznički Hum (22.IX.2002), near Split (22.VII.2004), Brajkovići (9.IX.2009), Kotli (12.IX.2009), Veprinac (15.IX.2009) and Baderna (17.IX.2009).

***Andricus galeatus* (Giraud, 1859)**

Synonym: *Cynips galeata* Giraud, 1859

Host plant: Bud galls on *Quercus robur* and *Quercus pubescens*.

Localities: Records were made near Rakovica (29.V.2000), Škropeti (31.V.2000), Dolenja Vas (23.IX.2002), Marcani (4.VII.2008), near Tar (5.VII.2008) and Lobarika (10.IX.2009).

***Andricus gallaearnaeformis* (Boyer de Fonscolombe, 1832)**

Synonyms: Asexual generation: *Diplolepis gallae urnaeformis* Boyer de Fonscolombe, 1832; *Cynips urnaeformis* Giraud, 1859; sexual generation: *Andricus sufflator* Mayr, 1882

Host plant: Leaf galls of the asexual generation on *Quercus pubescens*.

Locality: This year's asexual generation galls were found in Baderna (4.VII.2008) and Farini (16.IX.2009).

***Andricus gemmeus* (Giraud, 1859)**

Synonyms: *Cynips gemmea* Giraud, 1859; *Aphilothrix kirchsbergi* Wachtl, 1876

Host plants: Asexual generation bud galls on *Quercus pubescens*.

Locality: Only one asexual generation gall with exit hole in Lobarika (10.IX.2009).

***Andricus glutinosus* (Giraud, 1859)**

Synonym: *Cynips glutinosa* Giraud, 1859

Host plants: Bud galls on *Quercus robur* and *Quercus petraea*.

Localities: Galls were found only near Rakovica (29.V.2000; 19.VII.2004) and in Gornji Vaganac (20.VII.2004).

***Andricus grossulariae* Giraud, 1859**

Synonyms: Asexual generation: *Cynips mayri* Wachtl, 1878; *Andricus mayri*: Mayr, 1882

Host plant: Catkin sexual generation galls on *Quercus cerris*.

Localities: The species was found on the Isle of Cres near Vodice (18.VI.1997) and in Istria in Tinjan (4.VII.2008), near Tar (5.VII.2008; 14.IX.2009) as well as Veprinac (15.IX.2009).

***Andricus hungaricus* (Hartig, 1843)**

Synonym: *Cynips hungarica* Hartig, 1843

Host plant: Fallen galls were found only under *Quercus robur*.

Localities: Several galls near Peščenica (15.VI.1997), Šatornja (28.V.2000) and Rakovica (22.IX.2002).

***Andricus hystrix* Trotter, 1899**

Host plant: Bud galls on trunk and twigs of young *Quercus pubescens*.

Localities: Galls were found near Tar (30.V.2000; 5.VII.2008), Dolenja Vas (23.IX.2002), Umag (14.VII.2004), Marcani (4.VII.2008), Melnica (4.VII.2008) and Lobarika (10.IX.2009).

***Andricus infectorius* (Hartig, 1843)**

Synonyms: *Cynips infectoria* Hartig, 1843; *Cynips tinctoria* var. *nostras* Stefani, 1886; *Andricus tinctoriusnostrus* (Stefani, 1886)

Host plants: Asexual generation bud galls were found on *Quercus pubescens* and *Quercus robur*.

Localities: Asexual generation galls were found in Peščenica (14.VI.1997) and in Istria near Tar (15.IX.2004), Baderna (4.VII.2008) and Melnica (4.VII.2008).

***Andricus inflator* Hartig, 1840**

Synonym: Asexual generation: *Cynips globuli* Hartig, 1840

Host plants: Galls from sexual generation were found on tip of twig and from asexual generation on buds of *Quercus robur*, *Quercus petraea* and *Quercus pubescens*.

Localities: Peščenica (14.–15.VI.1997), near Zajci (17.VI.1997) and Rakovica (29.V.2000; 22.IX.2002; 19.VII.2004), Soblinec (22.IX.2002), Breznički Hum (22.IX.2002), Dolenja Vas (23.IX.2002), Popovec (26.VII.2004), Buje (15.IX.2004) and Motovun (16.IX.2004; 5.VII.2008; 11.IX.2009).

***Andricus kollari* (Hartig, 1843)**

Synonyms: Asexual generation: *Cynips kollari* Hartig, 1843; sexual generation: *Andricus circulans* Mayr, 1870

Host plants: Only asexual generation bud galls were found on *Quercus robur* and *Quercus pubescens*.

Localities: The species is widespread and common in Croatia. Peščenica (15.VI.1997), in the city of Labin (16.VI.1997), near Hreljići (17.VI.1997), Zajci (17.VI.1997), Plominsko Zagorje (17.VI.1997), Vodice (18.VI.1997), Omišalj (19.VI.1997), Motovun (20.VI.1997, 14.VII.2004; 16.IX.2004), Šatornja (28.V.2000), near Rakovica (29.V.2000; 22.IX.2002; 19.VII.2004), near Tar (30.V.2000; 23.IX.2002; 15.IX.2004; 5.VII.2008; 14.IX.2009), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), near Vrsar (2.VI.2000), Krunčići (2.VI.2000), Zalužnica (23.IX.2002),

Gračišće (14.VII.2004), Umag (14.VII.2004), Gornji Vaganac (20.VII.2004), Kučiće (23.VII.2004), Zaton Doli (24.VII.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004), Baderna (4.VII.2008; 17.IX.2009), Marcani (4.VII.2008), Melnica (4.VII.2008), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009) and Farini (16.IX.2009).

***Andricus korlevici* (Kieffer, 1902) nov. comb.**

So far the species has belonged to the genus *Cynips*. It is probable that this species does not fit very well into that genus. Unfortunately, from the galls collected in the first years no adult could be considered, so a classification was not possible. No description of the wasps is found in the literature. KIEFFER (1902) and the next authors (HOUARD, 1908 and DALLA TORRE & KIEFFER, 1910) describe only the gall. From one gall only, which was found in autumn 2009, one asexual generation female emerged. It thus became possible to give a description of the wasps. After examination of the species, it was found that the gall wasp *Cynips korlevici* must be transferred to the genus *Andricus*.

Host plant: Bud gall on *Quercus pubescens*.

Localities: Galls were rare in the vicinity of Zajci (17.VI.1997), near Tar (30.V.2000; 15.IX.2004), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), Krasica (2.VI.2000), Vižinada (15.IX.2004), near Umag (3.VII.2008), Kaštelir (5.VII.2008), Lobarika (10.IX.2009) and Veprinac (15.IX.2009). All galls showed exit holes. This year's galls were found in Marcani (4.VII.2008), one gall in the vicinity of Tar (5.VII.2008), Višnjan (11.IX.2009), Vela Traba (12.IX.2009) and a tree in Kaštel (13.IX.2009).

***Andricus lignicola* (Hartig, 1840)**

Synonym: *Cynips lignicola* Hartig, 1840

Host plants: Asexual generation bud galls were found on *Quercus robur*, *Quercus petraea* and *Quercus pubescens*.

Localities: Peščenica (14./15.VI.1997), Vodice (18.VI.1997), near Rakovica (29.V.2000; 19.VII.2004), Breznički Hum (22.IX.2002), Gornji Vaganac (20.VII.2004), Marcani (4.VII.2008) and Motovun (5.VII.2008; 11.IX.2009).

***Andricus lucidus* (Hartig, 1843)**

Synonyms: Asexual generation: *Cynips lucida* Hartig, 1843; sexual generation: *Andricus aestivalis* Giraud, 1859

Host plant: Bud galls on *Quercus pubescens*.

Localities: The species was found only in Istria. Hreljići (17.VI.1997), near Zajci (17.VI.1997), near Tar (30.V.2000; 23.IX.2002; 14.IX.2009), Škropeti (31.V.2000), Dolenja Vas (23.IX.2002), Lobarika (10.IX.2009), Višnjan (11.IX.2009), Kaštel (13.IX.2009), Vela Traba (12.IX.2009) galls from sexual generation; 15.IX.2009), Veprinac (15.IX.2009) and Baderna (17.IX.2009).

***Andricus mitratus* (Mayr, 1870)**

Synonyms: *Cynips glutinosa* var. *mitrata* Mayr, 1870; *Cynips mitrata* Kieffer, 1897-1901

Host plant: Galls on lateral buds of *Quercus robur*.

Localities: Motovun (20.VI.1997; 16.IX.2004; 11.IX.2009) and Rakovica (29.V.2000). In most cases the galls were already deserted.

***Andricus multiplicatus* Giraud, 1859**

Host plant: The host plant is *Quercus cerris*.

Locality: Some galls were found near Tar (5.VII.2008).

***Andricus panteli* Kieffer, 1896**

In my view it is not certain whether *Andricus panteli* is a valid species or a synonym for *Andricus grossulariae*. That is why I list this species here separately.

Host plants: Bud galls on *Quercus pubescens*. An old gall induced on a bud of *Quercus robur* Motovun (5.VII.2008).

Localities: Galls of the previous year were found in the city of Labin (16.VI.1997), near Tar (30.V.2000; 23.IX.2002), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000), Motovun (5.VII.2008). This year's galls were found in the vicinity of Tar (23.IX.2002; 15.IX.2004), Lobarika (10.IX.2009), Vela Traba (12.IX.2009) and Veprinac (15.IX.2009).

***Andricus paradoxus* (Radoskovsky, 1866)**

Synonyms: Asexual generation: *Manderstjernia paradoxa* Radoskovsky, 1866; *Cynips albo-punctata* Schlechtendal, 1870; sexual generation: *Andricus albopunctatus* f. *barbotini* Folliot, 1964

Host plant: *Quercus robur*

Locality: Only by Peščenica (14.VI.1997).

***Andricus polycerus* (Giraud, 1859)**

Synonym: *Cynips polycera* Giraud, 1859

Host plants: Asexual generation bud galls on *Quercus robur* and *Quercus pubescens* particularly on small oak shrubs.

Localities: Plominsko Zagorje (17.VI.1997), near Rakovica (29.V.2000), near Tar (23.IX.2002; 14.VII.2004; 15.IX.2004; 5.VII.2008), Dolenja Vas (1.VI.2000; 23.IX.2002), Umag (17.VII.2004), near Split (22.VII.2004), Kučiče (23.VII.2004), Zaton Doli (24.VII.2004), Buje (15.IX.2004), Vižinada (15.IX.2004) and Kaštelir (5.VII.2008).

***Andricus pseudoinflator* Tavares, 1901**

Synonym: *Andricus bocagei* Tavares, 1901

Host plants: Sexual generation galls developed on the buds of *Quercus robur* (Rakovica) and *Quercus pubescens*.

Localities: The species is widely distributed in Istria and was found in some localities. Plominsko Zagorje (17.VI.1997), near Zajci (17.VI.1997), near Rakovica (29.V.2000), near Tar (30.V.2000), Šušnjeva (1.VI.2000), near Vrsar (2.VI.2000), Krasica (2.VI.2000), Buje (17.VII.2004) and Vela Traba (12.IX.2009). Most galls were already deserted. In the period from the 2nd to 6th of June 2000 nine females and one male emerged from ten galls collected in Šušnjeva..

***Andricus quercuscalicis* (Burgsdorf, 1783)**

Synonyms: Asexual generation: *Cynips calycis quercus* Burgsdorf, 1783; sexual generation: *Andricus cerri* Beijerinck, 1896

Host plants: Only asexual generation galls were found, on the acorn of *Quercus robur*.

Localities: Asexual generation galls ranged in Šatornja (28.V.2000), near Rakovica (22.IX.2002) rare and in the vicinity of Motovun (17.VII.2004; 16.IX.2004, 5.VII.2008) common. It was noticeable, that in 2009 (11.IX.2009) only one asexual generation gall was found..

***Andricus quercuscorticis* (Linnaeus, 1761)**

Synonyms: Asexual generation: *Cynips corticis* Hartig, 1840; sexual generation: *Andricus gemmatus* Adler, 1881

Host plant: Sexual generation gall on leaf axil on *Quercus pubescens*.

Locality: Only one gall from sexual generation was found near Dolenja Vas (1.VI.2000).

***Andricus quercusradicis* (Fabricius, 1798)**

Synonyms: Asexual generation: *Cynips radicis* Hartig, 1841; sexual generation: *Andricus trilineatus* Hartig, 1840; *Andricus noduli* Hartig, 1840

Host plant: Sexual generation galls on young shoots of *Quercus pubescens*.

Localities: In the vicinity of Vrsar (2.VI.2000) and Tar (15.IX.2004) galls were found on young shoots, which showed exit holes.

***Andricus quercustozae* (Bosc d'Antic, 1792)**

Synonyms: *Cynips quercus tozae* Bosc d'Antic, 1792; *Cynips quercus tojae*, Fabricius, 1793; *Cynips argentea* Hartig, 1843; *Cynips rosenhaueri* Hartig, 1856

Host plant: Bud galls on *Quercus pubescens*.

Localities: In the city of Labin (16.VI.1997), Hreljići (17.VI.1997), near Zajci (17.VI.1997), Plominsko Zagorje (17.VI.1997), Omišalj (19.VI.1997), near Tar (30.V.2000; 23.IX.2002; 14.VII.2004; 15.IX.2004; 5.VII.2008; 14.IX.2009), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), near Šušnjeva (1.VI.2000), near Vrsar (2.VI.2000; 9.IX.2009), Krunčiči (2.VI.2000) and Krasica (2.VI.2000), Umag (13.VII.2004; 16.IX.2004), Gračišće (14.VII.2004), Kučiče (23.VII.2004), Buje (15.IX.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004; 5.VII.2008), Umag (3.VII.2008), Kaštelir (5.VII.2008), Baderna (4.VII.2008; 17.IX.2009), Tinjan (4.VII.2008), Marcani (4.VII.2008), Melnica (4.VII.2008; 10.IX.2009), Brajkovići (9.IX.2009), Loborika (10.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Cerovlje (12.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009) and Farini (16.IX.2009). The species is widespread in Istria and especially on the adjoining islands.

***Andricus seckendorffi* (Wachtl, 1878)**

Synonyms: *Aphilothrix seckendorffi* Wachtl, 1878; *Andricus magretii* Kieffer, 1897

Host plant: Asexual generation takes place in galls on acorn cups on *Quercus pubescens*.

Locality: Only three galls were found at two places, one gall near Tar (15.IX.2004) and two years' galls in Veprinac (15.IX.2009).

***Andricus seminationis* (Giraud, 1859)**

Synonym: *Cynips seminationis* Giraud, 1859

Host plant: Catkin galls on *Quercus robur*

Locality: Only two galls near Peščenica (14.VI.1997).

***Andricus solitarius* (Boyer de Fonscolombe, 1832)**

Synonyms: Asexual generation: *Diplolepis solitaria* Boyer de Fonscolombe, 1832; *Diplolepis gallae pyriformis* Olivier, 1791; *Cynips ferruginea* Hartig, 1840; sexual generation: *Andricus occultus* Tschek, 1871; *Oncaspis filigranata* Dettmer, 1925.

Host plants: Asexual generation bud galls from were found in the leaf axils on *Quercus robur*, *Quercus pubescens* and *Quercus petraea*.

Localities: Omišalj (19.VI.1997), near Rakovica (29.V.2000), near Tar (30.V.2000; 23.IX.2002; 15.IX.2004; 5.VII.2008), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000; 23.IX.2002), Buje (17.VII.2004), Kučiče (23.VII.2004), Baderna (4.VII.2008), Marcani (4.VII.2008), Kaštelir (5.VII.2008), Brajkovići (9.IX.2009), Loborika (10.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Veprinac (15.IX.2009) and Farini (16.IX.2009).

***Andricus stefanii* (Kieffer, 1897)**

Synonym: *Cynips stefanii* Kieffer, 1897

Host plant: Galls on very small oaks or young terminal shoots on stumps of *Quercus pubescens*.

Localities: Plominsko Zagorje (17.VI.1997), near Zajci (17.VI.1997), Škropeti (31.V.2000), near Tar (14.VII.2004; 15.IX.2004; 5.VII.2008), Šterna (16.IX.2004) and Melnica (4.VII.2008).

***Andricus superfetationis* (Giraud, 1859)**

Synonym: *Cynips superfetationis* Giraud, 1859

Host plant: Acorns galls on *Quercus pubescens* and smooth green galls on acorns of *Quercus robur* (Motovun).

Localities: Some galls in the vicinity of Motovun (5.VII.2008) and two galls in Kotli (12.IX.2009).

***Andricus testaceipes* Hartig, 1840**

Synonym: Asexual generation: *Cynips sieboldi* Hartig, 1843

Host plant: Galls from asexual generation were found on bark on the underneath part of small stems, very often moss or grass covered, and sexual generation galls on leaf midribs as well as petioles of *Quercus robur*.

Localities: In Peščenica (14.VI.1997), Motovun (20.VI.1997), near Rakovica (29.V.2000) and near Tar (30.V.2000) sexual generation galls were found. Sexual generation occurred in Breznički Hum (22.IX.2002) and Motovun (16.IX.2004; 5.VII.2008; 11.IX.2009).

***Andricus tomentosus* (Trotter, 1901)**

Synonym: *Cynips tomentosa* Trotter, 1901

Host plant: Bud galls from asexual generation on *Quercus pubescens*.

Locality: Only old galls were found in numbers in Zaton Doli (24.VII.2004).

***Andricus trotteri* Kieffer, 1898**

Host plant: Bud galls from asexual generation on *Quercus pubescens*.

Locality: Only a few old galls were found by Tar (30.V.2000).

***Andricus truncicolus* (Giraud, 1859)**

Synonym: *Cynips truncicola* Giraud, 1859

Host plant: Galls of old trees on *Quercus pubescens*.

Locality: Only one old gall was found in Brajkovići (9.IX.2009).

***Andricus vindobonensis* Müllner, 1901**

Host plant: Sexual generation catkin gall on *Quercus cerris*.

Locality: Current year galls with exit holes were found only near Tar (14.IX.2009).

***Aphelonyx cerricola* (Giraud, 1859)**

Synonym: *Cynips cerricola* Giraud, 1859

Host plant: Bud galls on *Quercus cerris*.

Localities: The species was found sporadically near Peščenica (15.VI.1997), Hreljići (17.VI.1997), near Rakovica (29.V.2000), Tar (30.V.2000; 14.VII.2004; 14.IX.2009), near Tar (23.IX.2002), Zalužnica (23.IX.2002), Gračišće (14.VII.2004) and Gornji Vaganac (20.VII.2004).

***Biorhiza pallida* (Olivier, 1791)**

Synonyms: Sexual generation: *Diplolepis pallidus* Olivier, 1791; *Cynips quercus terminalis* Fabricius, 1798; asexual generation: *Cynips aptera* Bosc, 1791

Host plants: Only sexual generation galls were found, on *Quercus robur* and *Quercus pubescens*.

Localities: Although the species is widespread and locally common, it was striking that no sexual generation galls were found in 1997. In the later years galls were found in Šatornja (28.V.2000), near Rakovica (29.V.2000; 19.VII.2004), near Tar (30.V.2000; 23.IX.2002; 14.VII.2004; 5.VII.2008), Dolenja Vas (1.VI.2000; 23.IX.2002), near Vrsar (2.VI.2000), Krunčići (2.VI.2000), Krasica (2.VI.2000), Soblinec (22.IX.2002), Umag (17.VII.2004; 16.IX.2004), Šibenik (21.VII.2004), near Split (22.VII.2004), Kučiće (23.VII.2004), Zaton Doli (24.VII.2004), Buje (15.IX.2004), Baderna (4.VII.2008), Marcani (4.VII.2008), Šterna (5.VII.2008), Vela Traba (12.IX.2009) and Kaštel (13.IX.2009).

***Callirhytis glandium* (Giraud, 1859)**

Synonym: Asexual generation: *Andricus glandium* Giraud, 1859

Host plant: Asexual generation galls were found in acorns of *Quercus cerris*.

Localities: Some acorns with galls were found in Vela Traba (12.IX.2009), near Tar (14.IX.2009) and Veprinac (15.IX.2009).

***Cynips agama* Hartig, 1840**

Synonym: Asexual generation: *Dryophanta agama*: Mayr, 1870

Host plants: Asexual generation galls were found on the leaves of *Quercus robur* and *Quercus pubescens*.

Localities: Only several galls in the vicinity of Rakovica (19.VII.2004), Popovec (26.VII.2004), Buje (15.IX.2004), Baderna (4.VII.2008; 17.IX.2009), Marcani (4.VII.2008), in the vicinity of Tar (5.VII.2008), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Višnjan (11.IX.2009), in the vicinity of Motovun (11.IX.2009), Vela Traba (15.IX.2009) and Farini (16.IX.2009).

***Cynips cornifex* Hartig, 1843**

Synonym: *Dryophanta cornifex*: Mayr, 1870

Host plant: Galls on the underside of the leaf on *Quercus pubescens*.

Localities: Several galls were found in the vicinity of Tar (30.V.2000; 5.VII.2008; 14.IX.2009) and Vrsar (2.VI.2000) as well as Umag (14.VII.2004; 16.IX.2004), near Šterna (16.IX.2004; 5.VII.2008), Tinjan (4.VII.2008), Marcani (4.VII.2008), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Višnjan (11.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009) and Baderna (17.IX.2009). A great number occur in Vižinada (15.IX.2004) on small oak shrubs.

***Cynips divisa* Hartig, 1840**

Synonyms: Asexual generation: *Dryophanta divisa*: Mayr, 1870; sexual generation: *Spathogaster verrucosus* Schlechtendal, 1870

Host plant: Asexual generation galls on the leaf of *Quercus robur*.

Locality: This species was found only in Breznički Hum (22.IX.2002).

***Cynips longiventris* Hartig, 1840**

Synonym: Sexual generation: *Spathogaster similis* Adler, 1881

Host plant: Asexual generation galls on the underside of the leaf on *Quercus robur*.

Localities: One gall from the previous year was found near Rakovica (29.V.2000). This year's galls were found in Soblinec (22.IX.2002), Breznički Hum (22.IX.2002),

Motovun (14.VII.2004; 16.IX.2004; 5.VII.2008; 11.IX.2009), Rakovica (19.VII.2004), Vojnovac (19.VII.2004), Popovec (26.VII.2004) and Goričan (26.VII.2004).

***Cynips quercus* (Fourcroy, 1785)**

Synonyms: *Diplolepis quercus* Fourcroy, 1785; *Cynips folii* Schenck, 1863 (non Linnaeus, 1758); *Dryophanta pubescentis* Mayr, 1881

Host plant: Galls on the underside of leaves on *Quercus pubescens*.

Localities: Galls were found near Tar (23.IX.2002; 15.IX.2004; 5.VII.2008; 14.IX.2009), Dolenja Vas (23.IX.2002), Zalužnica (23.IX.2002), Umag (13.VII.2004; 16.IX.2004; 3.VII.2008), (14.VII.2004), Buje (17.VII.2004; 15.IX.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004), Baderna (4.VII.2008; 17.IX.2009), Marcani (4.VII.2008), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Vela Traba (12.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009) and Farini (16.IX.2009).

***Cynips quercusfolii* Linnaeus, 1758**

Synonyms: Asexual generation: *Diplolepis scutellaris* Olivier, 1791; *Cynips folii*: Hartig, 1840; sexual generation: *Spathogaster taschenbergi* Schlechtendal, 1870; *Spathogaster flosculi* Giraud, 1868

Host plants: Asexual generation galls on underside on leaves of *Quercus robur*, *Quercus pubescens* and *Quercus petraea*.

Localities: Only asexual generation galls were found, partially of the last year, on the ground in Peščenica (15.VI.1997), Motovun (20.VI.1997; 14.VII.2004; 16.IX.2004; 5.VII.2008) and near Rakovica (29.V.2000; 22.IX.2002; 19.VII.2004), Soblinec (22.IX.2002), Vojnovac (19.VII.2004), Popovec (26.VII.2004), Vižinada (15.IX.2004), Umag (16.IX.2004), Cerovlje (12.IX.2009) and Farini (16.IX.2009).

***Neuroterus albipes* Schenck, 1863**

Synonyms: Asexual generation: *Neuroterus pezizaeformis* Schlechtendal, 1870; sexual generation: *Spathogaster laeviusculus* Schenck, 1863

Host plants: Sexual generation galls were found on the leaf margin of *Quercus petraea* and asexual generation galls on the underside of leaves of *Quercus pubescens* and *Quercus robur*.

Localities: sexual generation: near Rakovica (29.V.2000); unisexual generation: near Tar (30.V.2000; 23.IX.2002), Soblinec (22.IX.2002) and Motovun (16.IX.2004; 11.IX.2009). The forma *reflexus* occur in Soblinec and Motovun.

***Neuroterus anthracinus* (Curtis, 1838)**

Synonyms: Asexual generation: *Cynips anthracina* Curtis, 1838; *Cynips ostria* Hartig, 1840; *Andricus ostrea* (Hartig, 1840); sexual generation: *Neuroterus furunculus* Beyrinck, 1882

Host plants: Leaf gall on the underside of *Quercus pubescens* and *Quercus robur*.

Localities: Asexual generation galls were found in Breznički Hum (22.IX.2002), Dolenja Vas (23.IX.2002), near Tar (23.IX.2002; 15.IX.2004; 14.IX.2009), Buje (15.IX.2004), Vižinada (15.IX.2004), Motovun (16.IX.2004; 11.IX.2009), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009), Farini (16.IX.2009) and Baderna (17.IX.2009).

***Neuroterus lanuginosus* Giraud, 1859**

Host plant: Galls most in small groups on the underside of *Quercus cerris* leaves.

Localities: Only individual galls near Tar (15.IX.2004), Melnica (4.VII.2008; 10.IX.2009) and Brajkovići (9.IX.2009).

***Neuroterus numismalis* (Geoffroy in Fourcroy, 1785)**

Synonyms: Asexual generation: *Cynips numismalis* Fourcroy, 1785; *Neuroterus reaumurii* Hartig, 1840; sexual generation: *Cynips vesicatrix* Schlechtendal, 1870; *Spathogaster vesicatrix*: Mayr, 1871

Host plants: Only asexual generation was found on the underside of leaves on *Quercus robur* and *Quercus pubescens*.

Localities: Finds were in Soblinec (22.IX.2002), Breznički Hum (22.IX.2002), near Rakovica (22.IX.2002; 19.VII.2004), Vojnovac (19.VII.2004), Gornji Vaganac (20.VII.2004), Popovec (26.VII.2004), Vižinada (15.IX.2004), Šterna (16.IX.2004), Umag (16.IX.2004), Brajkovići (9.IX.2009), Motovun (11.IX.2009), Cerovlje (12.IX.2009), Vela Traba (15.IX.2009) and Veprinac (15.IX.2009). The extreme frequency of galls was striking especially in Rakovica in 2004.

***Neuroterus obtectus* (Wachtl, 1880)**

Synonym: *Spathogaster* (Ameristus Först.) *obtecta* Wachtl, 1880

Host plant: Sexual generation bud galls in axils of young twigs or leaves on *Quercus cerris*.

Locality: Only one record, near Peščenica (15.VI.1997).

***Neuroterus politus* Hartig, 1840**

Synonyms: Asexual generation: *Andricus burgundus* Schlechtendal, 1870; *Neuroterus schlechtendali* Mayr, 1870; sexual generation: *Spathogaster petioliventrif* Hartig, 1840; *Spathogaster aprilinus* Giraud, 1859

Host plants: Sexual generation galls rare, on tips of previous year's shoots on *Quercus pubescens*.

Localities: Records were near Tar (30.V.2000; 5.VII.2008) and Dolenja Vas (1.VI.2000).

***Neuroterus quercusbaccarum* (Linnaeus, 1758)**

Synonyms: Sexual generation: *Cynips quercus baccarum* Linnaeus, 1758; *Cynips pedunculi quercus* Fourcroy, 1785; *Diplolepis gallae pisiformis* D'Anthoine, 1794; *Cynips interruptrix* Hartig, 1840; Asexual generation: *Diplolepis lenticularis* Olivier, 1791

Host plants: Asexual generation galls on the underside of leaves, from sexual generation, the »grape-gall«, on catkins and leaves of *Quercus pubescens* and *Quercus robur*.

Localities: Galls of both generations were widespread and common in Croatia. Finds were near Zajci (17.VI.1997), Garešnica (28.V.2000), Šatornja (28.V.2000), Rakovica (29.V.2000), near Tar (30.V.2000; 23.IX.2002; 15.IX.2004; 5.VII.2008; 14.IX.2009), Dolenja Vas (1.VI.2000; 23.IX.2002), Vrsar (2.VI.2000), Krasica (2.VI.2000), Buje (15.IX.2004), Vižinada (15.IX.2004), Umag (16.IX.2004), Motovun (16.IX.2004; 5.VII.2008; 11.IX.2009), Šterna (16.IX.2004), Brajkovići (9.IX.2009), Lobarika (10.IX.2009), Višnjan (11.IX.2009), Vela Traba (12.IX.2009), Kotli (12.IX.2009), Kaštel (13.IX.2009), Veprinac (15.IX.2009), Farini (16.IX.2009) and Baderna (17.IX.2009).

***Neuroterus saliens* (Kollar, 1857)**

Synonyms: Asexual generation: *Cynips saliens* Kollar, 1857; sexual generation: *Spathogaster glandiformis* Giraud, 1859

Host plant: Bisexual generation in underdeveloped acorns of *Quercus cerris*.

Localities: Sporadically, only sexual generation galls were found near Tar (30.V.2000; 23.IX.2002) and Tinjan (4.VII.2008).

***Neuroterus tricolor* Hartig, 1841**

Synonym: Sexual generation: *Spathogaster fumipennis* Hartig, 1841

Host plants: Sexual generation leaf gall on *Quercus pubescens* and *Quercus robur*.

Localities: Zajci (17.VI.1997), near Rakovica (29.V.2000), near Tar (30.V.2000), Škropeti (31.V.2000), Dolenja Vas (1.VI.2000), Vrsar (2.VI.2000), Krasica (2.VI.2000) and Tinjan (4.VII.2008).

***Pseudoneuroterus macropterus* (Hartig, 1843)**

Synonym: *Neuroterus macropterus* (Hartig, 1843)

Host plant: Gall on apex of a young shoot of *Quercus cerris*.

Localities: The species was found only near Peščenica (15.VI.1997), near Tar (23.IX.2002) and Melnica (4.VII.2008).

***Trigonaspis megaptera* (Panzer, 1801)**

Synonyms: Sexual generation: *Cynips megaptera* Panzer, 1801; *Trigonaspis crustalis* Hartig, 1840; Asexual generation: *Cynips renum* Hartig, 1840, *Trigonaspis renum*: Mayr, 1881

Host plant: Asexual generation galls on the underside of the leaf of *Quercus pubescens*.

Locality: Four asexual generation galls in Zalužnica (23.IX.2002).

One unknown gall was found in Dolenja Vas (23.IX.2002) on *Quercus petraea* (Fig. 2). It is a bud gall of brown tinge and developed on the tip of twig. The colour in the fresh condition is unknown. The form is round about 2 cm in diameter, in the middle, slightly concave with a lobed calyx similar to the flower of the pomegranate. The edge is irregularly bent. Unfortunately no determination was possible, because only a parasite emerged, a female *Sycophila biguttata* (Swederus, 1795) on 15.V.2003.



Fig. 2. Unknown gall on *Quercus petraea* found in Dolenja Vas, Istria, 23.IX.2002.

Description of an asexual female of *Andricus korlevici* (Kieffer, 1902) (Figs. 3, 4)

Length 4.2 mm, body uniformly reddish brown.

Head red brown with sparse short white setae. Clypeus dark brown to black. Face strongly structured. 2.5 times as broad as long from above, 1.3 times as broad as high. POL 1.8 times as broad as OOL, OOL 2.5 times as long as length of lateral

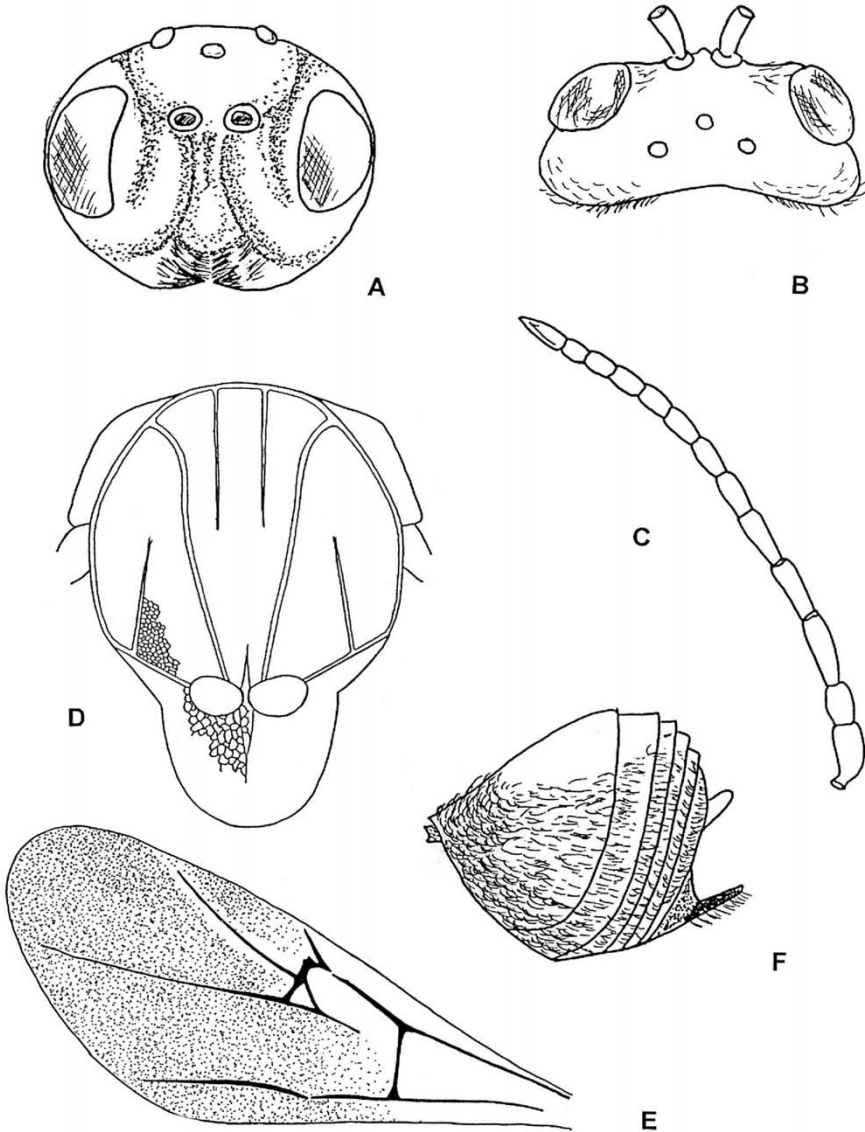


Fig. 3. A-F: *Andricus korlevici*, asexual female: head: A front view, B from above, C antenna, mesosoma: D dorsal view, E forewing, metasoma: F lateral view.

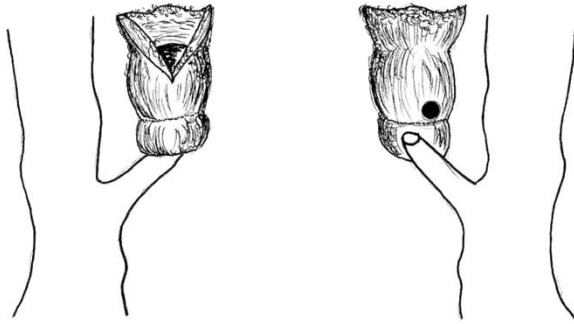


Fig. 4. Gall of *Andricus korlevici*, front view and dorsal view.

ocellus and 2.5 times as long as LOL. OOL 0.4 times as long as height of eye in front view.

Antenna 14-segmented with 12 flagellomeres, uniformly reddish brown, longer than head+mesosoma; the scape is slightly yellow brown; pedicel 1.8 times as long as broad; F1 the longest flagellomere but only negligible, 1.1-1.2 times as long as F2, F2 1.2 times as long as F3, all subsequent flagellomeres shorter; the suture between F11 and F12 is indistinct.

Mesosoma convex, slightly longer than or equal to height in lateral view, with very few white setae, scutum in dorsal view nearly same broad as long, fine wrinkled, lateral with single white setae. The anterior parallel line extending to the middle, only a few striking; notauli complete, well-impressed in all the length, nearly straight, at the end slightly curved; parapsidal line straight, extending to the middle, only few striking; median mesoscutal line short but distinct; dorsal axillary area dark brown to black with white setae. Scutellum wider than long, in the middle of a slight depression, uniformly rough rugose, with distinct sharp rugae. Scutellar foveae oval, nearly as broad as height, well delimited around, without setae.

Forewing hyaline, longer than body, with dark brown veins, radial cell 4.3 times as long as broad, areolet large, distinct triangular.

Tergites yellow brown, coxae with dark brown spot and white setae, tarsomere reddish brown to dark brown, tarsal claws nearly black. Femurs and tibiae with dense white setae laterally.

Metasoma slightly shorter than head+mesosoma, slightly higher than long in lateral view; reddish brown, dorsal dark brown, all tergites with dense short white setae laterally, especially dense on front part of first tergites, dorsal smooth, all tergites without micropunctures. Ventral spine of hypopygium light brown to brown, prominent part of ventral spine of hypopygium 5.5 times as long as broad, with relatively long white setae.

Gall

A monolocular bud gall, woody, more or less cylindrical, 8-9 mm in length and 4-5 mm in diameter, in the upper and lower third constricted, the upper end is

open with a depression, the edge is notched. The gall is brown, the surface is covered by fine short yellowish pubescence and scattered long white hairs, becoming glabrous and shiny with age. In the central part of the gall an inner gall is located. The single larval chamber is woody, globular, with a hard woody wall, which is connected with the tissue of the gall. The emergence hole is usually located above the lower constriction.

DISCUSSION

This paper will provide a contribution to knowledge of the gall wasp fauna of Croatia. From 1997 to 2009 I had the opportunity in seven outings to investigate the fauna of the gall wasps of Croatia. In total, 53 localities were studied in 12 regions. The focus of the investigation was in the north of the country.

The results of these investigations are exclusively from the author's own records. Records published in the literature and material in museums were not taken into account because the intention is not to create an overall fauna of the gall wasps of Croatia.

The complete gall wasp fauna of Croatia is not registered in this paper. Although a large number of species were recorded, in all probability more species are to be found. Not all regions have been included. Also, a targeted search for rare species was not possible intensively because of time constraints. Altogether 87 species of the gall wasp fauna of Croatia were recorded. The most species were found in the tribe of *Cynipini*, 68 species. The galls of the tribe *Cynipini* were induced on oaks. Oaks were divided into the subgenus *Erythrobalanus* – red oaks – and the subgenus *Lepidobalanus* – white oaks. In Europe, we cannot find galls on red oaks, only in the Nearctic region. There are various sections in white oaks. The author found galls on two sections only, on the section *Robur*, with the species *Quercus robur*, *Quercus petraea* and *Quercus pubescens* as well as the section *Cerris* with the species *Quercus cerris* (SCHÜTT *et al.*, 2002). Five species were recorded of the tribe *Diplolepidini*. Galls were induced on various species of *Rosa*. The valid species could not be determined on the galls of »*Diplolepis eglanteria*«, whether *Diplolepis eglanteria* or *Diplolepis centifoliae*, because the breeding of the gall wasps out of the gall for the determination of adults was not possible.

Only one species of the tribe *Pediaspidini*, inducing galls on *Aceraceae*, *Pediaspis aceris*, occurs in Europe. This gall wasp was also recorded in Croatia. The most elusive for the examination of gall wasp fauna of Croatia are in the tribe *Aylacini*. Only galls of three species on herbaceous plants were found by the author. The tribe *Synergini*, in which wasps are developed in the galls of other gall wasps, is represented with 10 species. Further species of this tribe are possible too.

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