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FINDINGS OF THE SPECIES *AULACIDEA TRAGOPOGONIS* (THOMSON) AND *TIMASPIS CICHORII* (KIEFFER) (HYMENOPTERA, CYNIPIDAE) IN SERBIA

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Abstract

In research on the fauna of insect parasitoids of cynipid gall wasps in Serbia, galls of the cynipid gall wasp species *Aulacidea tragopogonis* (Thomson, 1877) were found on *Tragopogon dubius* Scop. (Asteraceae), while galls of the species *Timaspis cichorii* (Kieffer, 1909) were found on *Cichorium intybus* L. (Asteraceae). As these are the only findings of the indicated cynipid gall wasps in Serbia to date, they are published in the present paper. Parasitoids obtained from the collected galls of these cynipid gall wasps are also published here.

Keywords: Cynipidae, fauna, parasitoids, *Tragopogon*, *Cichorium*, Slankamen

Introduction

Aulacidea tragopogonis is a univoltine cynipid gall wasp that in Europe has up to now been recorded in Sweden, Denmark, Poland, Germany, Austria, Romania, Ukraine, Russia, Great Britain, Spain and France (Melika, 2006; Mitroiu, 2013). In the stem of *Tragopogon dubius* Scop., *T. major* Jacq., *T. porrifolius* L. and *T. pratensis* L. (Asteraceae), it forms small galls that when they appear individually do not cause deformation of the stem. However, when they appear in large numbers, the galls often fuse and create a readily discernible woody excrescence up to 40 mm long. The galls mature in the fall, and this species overwinters in them in the larval stage. The following spring (in April-May) pupae appear from which imagoes hatch during May-June (Melika, 2006).

Timaspis cichorii is another univoltine cynipid gall wasp, one that has been recorded to date in Spain, France, Hungary, Poland, Turkmenistan, Ukraine, Trans-Caucasia and Asia Minor. Its galls are found in the stem of *Cichorium intybus* L. (Asteraceae). They are dispersed along the stem and difficult to detect because they cause no external deformation of it. In them are found ellipsoidal larval chambers measuring about 1.5 mm in diameter. The larvae overwinter in these chambers. Imagoes appear in the spring, April-July (Melika, 2006).

In investigating the fauna of insect parasitoids of cynipid gall wasps in Serbia, we found galls of the species *A. tragopogonis* and *T. cichorii*. As these are their only findings in Serbia to date (Langhoffer, 1915; Baudyš, 1928; Maksimović *et al*., 1982; Pal, 1983a, b; Mihajlović & Marković, 2003; Glavendekić & Mihajlović, 2004; Drekić, 2006; Marković, 2014, 2015; Marković & Stojanović, 2007, 2009; Stojanović & Marković, 2016), we publish them in thispaper. We also publish here the parasitoids obtained from galls of the indicated species.

Material and Method

The species *A. tragopogonis* was obtained from galls collected from *Tragopogon dubius* Scop. on 02.10. 1999 at the locality Stari Slankamen (45˚09'14.56" N, 20˚13'46.74" E) and on 16.09. 2000 at the locality Stari Slankamen – Koševac (45˚09'54.96 N, 20˚11'55.48" E), while the species *T. cichorii* was obtained from galls collected from *Cichorium intybus* L. on 07.03.1999 at the locality Boljevci – Crni Lug (44˚42'40.07" N, 20˚12'31.02" E) (leg. A. Stojanović). In laboratory, all the collected galls were put into photoeclectors. The photoeclectors were inspected daily during the time of appearance of imagoes of the indicated species and their parasitoids. The outflying imagoes were collected, killed with ether, prepared and identified (by A. Stojanović), after which they were deposited in the insect collection of the Natural History Museum in Belgrade (collections numbers 595.791 and 595.792.1), where they now reside.

Identification of imagoes of *A. tragopogonis* and *T. cichorii* was performed using papers of Kierych (1971), Zerova *et al*. (1988), Nieves-Aldrey (1994), Melika & Karimpour (2012) and Melika (2006). Imagoes of the obtained parasitoids were identified using papers of Graham (1969, 1991), Bouček (1977), Zerova (1978, 1995), Kalina (1981), Askew & Nieves-Aldrey (1988, 2000), Grissell (1995), Dzhanokmen (1999), Stojanova (1999), Andriescu & Mitroiu (2004), Askew *et al*. (2004, 2007), Xiao *et al*. (2004), Zerova *et al*. (2008), Zerova & Seryogina (2009), Askew (2011) and Klymenko (2011).

Results and Discussion

Galls collected from *T. dubius* yielded 91 imagoes of *A. tragopogonis* (56 ♀♀, 35 ♂♂), in addition to 108 imagoes of six parasitoid species: *Eupelmus vesicularis* (Retzius, 1783) (5 ♀♀, 2 ♂♂) (Chalcidoidea, Eupelmidae); *Eurytoma centaureae* Claridge, 1960 (1 ♀ 2 ♂♂), *E. hybrida* Zerova, 1978 (26 ♀♀, 26 ♂♂) and *E. jaceae* Mayr, 1878 (10 ♀♀, 6 ♂♂) (Chalcidoidea, Eurytomidae); *Pteromalus hieracii* Thomson, 1878 (1 ♂) (Chalcidoidea, Pteromalidae); and *Adontomerus impolitus* (Askew & Nieves-Aldrey, 1988) (29 ♀♀) (Chalcidoidea, Torymidae). Table I presents the number of imagoes of *A. tragopogonis* and its parasitoids obtained from galls collected at two localities.

Galls collected from *C. intybus* yielded 212 females of *T. cichorii* and 245 imagoes of nine parasitoid species: *Aprostocetus* sp. (1 ♀) (Chalcidoidea, Eulophidae); *E. vesicularis* (12 ♀♀) and *Baryscapus papaveris* Graham, 1991 (11 ♀♀, 4 ♂♂) (Chalcidoidea, Eupelmidae); *Eurytoma aspila* (Walker, 1836) (94 ♀♀, 79 ♂♂), *E. centaureae* (2 ♀♀, 2 ♂♂) and *E. jaceae* (1 ♂) (Chalcidoidea, Eurytomidae); *Stinoplus cichorii* Askew, 2011 (2 ♀♀) and *Homoporus subniger* (Walker, 1835) (22 ♀♀, 14 ♂♂) (Chalcidoidea, Pteromalidae); and *A. impolitus* (1 ♀).

Table I. Number of imagoes of *A. tragopogonis* and its parasitoids obtained at two localities.

Species	Locality			
	Stari Slankamen		Stari Slankamen Koševac	
Hymenoptera	♀♀	♂♂	♀♀	♂♂
Cynipidae				
Aulacidea tragopogonis	25	8	31	27
Eupelmidae				
Eupelmus vesicularis (Retzius, 1783)	-	-	5	2
Eurytomidae				
Eurytoma centaureae Claridge, 1960	1	2	-	-
E. hybrida Zerova, 1978	8	6	18	20
E. jaceae Mayr, 1878	-	-	10	6
Pteromalidae				
Pteromalus hieracii Thomson, 1878	-	1	-	-
Torymidae				
Adontomerus impolitus (Askew & Nieves-Aldrey, 1988)	11	-	18	-

According to Melika (2006) and Mitroiu (2013), the cynipid gall wasps *A. tragopogonis* and *T. cichorii* have rarely been recorded before now on the Balkan Peninsula. It can be freely asserted that they were to be expected in Serbia because they have already been found in some neighbouring countries (*A. tragopogonis* in Romania, *T. cichorii* in Hungary) (Melika, 2006).

A large number of parasitoids were found to be associated with *A. tragopogonis* and *T. cichorii* in Serbia. Those are polyphagous species of which some have not been recorded up to now in Serbia (*A. impolitus, E. centaureae, E. hybrida, E. jaceae, P. hieracii, S. cichorii*) (Bouček, 1977; Noyes, 2016; Stojanović & Marković, 2016). Moreover, they also include species that have not been mentioned before as being associated with *A. tragopogonis* and *T. cichorii* (*E. centaureae* for *A. tragopogonis*; and *A. impolitus, B. papavaeris, E. centaureae* and *E. jaceae* for *T. cichorii*) (Askew *et al*., 2006; Noyes, 2016).

Among the obtained parasitoids of *T. cichorii* in Serbia is the species *S. cichorii*. According to Noyes (2016), it was previously recorded only in Spain.

The parasitoids obtained from galls of *A. tragopogonis* and *T. cichorii* in the course of the present investigations probably are not the only parasitoids associated with them in Serbia. They were obtained from a small number of samples. For this reason, it is possible that other parasitoids will be discovered when new samples of the galls of these species are collected.

References

Andriescu, I. & Mitroiu, M. D. (2004). Notes on the pteromalid fauna (Hymenoptera, Chalcidoidea, Pteromalidae) of Dobrogea, Romania (II). *Analele Stiintifice ale Universitatii "Al. I. Cuza" Iasi (Biologie Animala), 50*, 89-96.

Askew, R. R. (2011). European *Stinoplus* Thomson, 1878 (Hymenoptera., Pteromalidae), with descriptions of four new species. *Entomologist's Monthly Magazine, 147*, 3-18.

Askew, R. R. & Nieves-Aldrey, J. L. (1988). Some Monodontomerinae and Megastigminae (Torymidae) associated with Cynipidae in Spain (Hymenoptera). *Entomologica Scandinavica, 18*, 355-360

Askew, R. R. & Nieves-Aldrey, J. L. (2000). The genus *Eupelmus* Dalman, 1820 (Hymenoptera, Chalcidoidea,

Eupelmidae) in peninsular Spain and the Canary Islands, with taxonomic notes and descriptions of new species. *Graellsia, 56*, 49-61.

Askew, R. R., Gomez, J. F. & Nieves-Aldrey, J. L. (2004). Species of Microdontomerini (Hymenoptera: Chalcidoidea: Torymidae) associated with Galls of Cynipidae (Hymenoptera) in Europe. *Journal of Hymenoptera Research, 13*(2), 214-222.

Askew, R. R., Gomez, J. F. & Nieves-Aldrey, J. L. (2007). On the parasitoid community of *Aulacidea laurae* (Hym., Cynipidae), with description of a new species of *Adontomerus* (Hym., Torymidae). *Journal of Natural History, 41*(29-32), 1765-1773.

Askew, R. R., Plantard, O., Gomez, J. F., Hernandez Nieves, M. & Nieves-Aldrey, J. L. (2006). Catalogue of parasitoids and inquilines in galls of Aylacini, Diplolepini and Pediaspidini (Hym., Cynipidae) in West Palaearctic. *Zootaxa, 1301*, 3-60.

Baudyš, E. (1928). Contribution to knowledge of the zoocecids of Yugoslavia and neighboring countries. *Sbornik Vysoke Skoly Zemedelske v Brne, 13*, 1-99.

Bouček, Z. (1977). A faunistic review of the Yugoslavian Chalcidoidea (parasitic Hymenoptera). *Acta Entomologica Jugoslavica, 13 (Supplement)*, 1-145.

Drekić, M. (2006). Study of Harmful Insects of Pedunculate Oak Acorns in a Seed Plantation on Banovo Brdo. Master's Dissertation, Faculty of Forestry, Belgrade.

Dzhanokmen, K. A. (1999). New species of pteromalids from the genus *Homoporus* (Hymenoptera, Chalcidoidea, Pteromalidae) and an illustrated key to species of this genera from Kazakhstan. *Zoologicheskiy Zhurnal, 78*(2), 181-190.

Glavendekić, M. & Mihajlović, LJ. (2004). Phytophagous insects in oak forests in the National Park Djerdap. *Šumarstvo, 4*, 19-30.

Graham, M. W. R. de V. (1969). The Pteromalidae of North-Western Europe (Hymenoptera: Chalcidoidea). *Bulletin of the British Museum (Natural History) (Entomology), Supplement 16*, 1-908.

Graham, M. W. R. de V. (1991). A reclassification of the European Tetrastichinae (Hymenoptera: Eulophidae): revision of the remaining genera. *Memoirs of the American Entomological Institute, 49,* 1-322.

Grissell, E. E. (1995). Toryminae (Hymenoptera: Chalcidoidea: Torymidae): a redefinition, generic classification and annotated world catalog of species. *Memoirs on Entomology, International, 2*, 1-470.

Kalina, V. (1981). The Palaearctic species of the genus *Macroneura* Walker, 1837 (Hymenoptera, Chalcidoidea, Eupelmidae), with descriptions of new species. *Sbornik Vedeckeho Lesnickeho Ustavu Vysoke Skoly Zemedelske v Praze, 24*, 83-111.

Kierych, E. (1971). Gall-wasps (Hymenoptera: Cynipidae) of Bieszezady Mts. with description of a new subspecies. *Fragmenta Faunistica, 17*(12), 297-318.

Klymenko, S. I. (2011). Key to entomophagous species associated with phytophagous gall-wasps (Hymenoptera: Cynipidae) on herbs and shrubs in the south of Ukraine. *Ukrainska Entomofaunystika*, *2*(6), 1-12.

Langhoffer, A. (1915). The gall wasps of our oaks. *Šumarski list, 5-6*, 134-138.

Maksimović, M., Milivojević, B. & Pekić, R. (1982). Pests of the oak acorn in the seedling stand od Kupinska greda. *Zaštita bilja*, *33*(3), 221-257.

Marković, Č. (2014). Contribution to knowledge of the fauna of cynipid gall wasps (Hymenoptera, Cynipidae) of Mt. Jastrebac (Serbia). *Acta Entomologica Serbica*, *19(1/2)*, 63-72.

Marković, Č. (2015). Contribution to knowledge of the cynipid gall wasp (Hymenoptera, Cynipidae) fauna of Mt. Rtanj (Serbia). *Acta Entomologica Serbica*, *20*, 137-143.

Marković, Č. & Stojanović, A. (2007). Contribution to knowledge of the fauna of cynipid gall wasps (Hymenoptera, Cynipidae) of oaks in Serbia. In Anonymous (Ed.), *Zbornik rezimea XIII simpozijuma sa savetovanjem o zaštiti bilja sa medjunarodnim učešćem, Zlatibor, Srbija, 26-30 novembar 2007*. (pp. 142). Zlatibor: Društvo za zaštitu bilja Srbije.

Marković, Č. & Stojanović, A. (2009). Newly established cynipid gall wasps (Hymenoptera, Cynipidae) in Serbia. In

Anonymous (Ed.), *Preliminarni referati i rezimei, Sokobanja, Srbija, 23-27 septembar 2009.* (pp. 61). Sokobanja: Entomološko društvo Srbije.

Melika, G. (2006). Gall wasps of Ukraine. Cynipidae. *Vestnik Zoologii*, *Supplement 21*(1), 1-300.

Melika, G. & Karimpour, Y. (2012). Herb gall wasp fauna of Iran (Hymenoptera: Cynipidae, Aylacini). *North-Western Journal of Zoology, 8*(2), 268-277.

Mihajlović, LJ. & Marković, Č. (2003). Harmful species of insects on wild roses. In Anonymous (Ed.), *Zbornik rezimea VI savetovanja o zaštiti bilja, Zlatibor, Srbija, 24-28 novembar 2003.* (pp.72). Zlatibor: Društvo za zaštitu bilja Srbije.

Mitroiu, M. D. (2013). Fauna Europaea: Hymenoptera: Cynipidae. Fauna Europaea version 2.6.2. Retrieved from http://www.faunaeur.org.

Nieves-Aldrey, J. L. (1994). Revision of West-European Genera of the Tribe Aylacini Ashmead (Hymenoptera, Cynipidae). *Journal of Hymenoptera Research, 3*, 175-206.

Noyes, J. S. (2016). Universal Chalcidoidea Database. World Wide Web Electronic Publication. http://www.nhm.ac.uk/chalcidoids.

Pal, B. (1983a). Contribution to knowledge of the cecidofauna of herbaceous plants in Vojvodina. *Zbornik za prirodne nauke Matice Srpske, 65*, 131-140.

Pal, B. (1983b). Contribution to knowledge of the cecidofauna in Vojvodina. II. *Zbornik radova Prirodno-matematičkog fakulteta Univerziteta u Novom Sadu, biološka serija, 13*, 67-76.

Stojanova, A. M. (1999). Species of family Eurytomidae newly established in Bulgaria (Hymenoptera: Chalcidoidea). *Plovdivski Universitet "Paisij Khilendarski" Nauchni Trudove Biologiya Animalia, 35*(6), 59-61.

Stojanović, A. & Marković, Č., (2016). *Aylax papaveris* (Perris 1839) and *Barbotinia oraniensis* (Barbotin 1964): species new to the fauna of cynipid gall wasps (Hymenoptera, Cynipidae) of Serbia. *Acta Entomologica Serbica*, *21*(1), 21-25.

Xiao, H., Zhang, Y. Z., Huang, D. W. & Polaszek, A. (2004). A revision of *Homoporus* (Hymenoptera: Pteromalidae) of China. *Raffles Bulletin of Zoology*, *52*(1), 59-65.

Zerova, M. D. (1978). *Hymenoptera Parasitica. Chalcidoidea - Eurytomidae*. Kiev: Academy of Science of Ukraine RSR, Institute of Zoology, 360 pp.

Zerova, M. D. (1995). *The parasitic Hymenoptera - subfamilies Eurytominae and Eudecatominae (Chalcidoidea, Eurytomidae) of the Palaearctic.* Kiev: Naukova Dumka, 457 pp.

Zerova, M. D. & Seryogina, L. Y. (2009). A review of Palaearctic species of the genus *Eurytoma cynipsea* species group (Hymenoptera, Eurytomidae) with a description of a new species from Iran. *Zoologicheskiy Zhurnal, 88*(8), 951-959.

Zerova, M. D., Djakonchuk, L. A. & Ermolenko, V. M. (1988). *Nasekomye-galloobrazovateli kul'turnyh i dikorastuschih rastenij Evropejskoj chasti SSSR. Pereponchatokrylye* (*Gall-forming insects of cultivated and wild plants of the European part of the USSR).* Kiev: Naukova Dumka, 160 pp.

Zerova, M. D., Seryogina, L. Y. & Karimpour, Y. (2008). New Species of the Chalcidoid Wasps of the Families Eurytomidae and Torymidae (*Hymenoptera*, *Chalcidoidea*) from Iran. *Vestnik Zoologii, 42*(6), 101-108.

НАЛАЗИ ВРСТА *AULACIDEA TRAGOPOGONIS* (THOMSON) *И TIMASPIS CICHORII* (KIEFFER) (HYMENOPTERA, CYNIPIDAE) У СРБИЈИ

АЛЕКСАНДАР СТОЈАНОВИЋ и ЧЕДОМИР МАРКОВИЋ

ИЗВОД

Истражујући фауну инсеката паразитоида галиколних Cynipidae у Србији на *Tragopogon dubius* Scop. (Asteraceae) пронађене су гале галиколне Cynipidae *Aulacidea tragopogonis* (Thomson, 1877) а на *Cichorium intybus* L. (Asteraceae) гале галиколне Cynipidae *Timaspis cichorii* (Kieffer, 1909). Пошто ове две галиколне Cynipidae у Србији до сада нису констатоване у раду су наведени локалитети на којима су оне први пут пронађене. Такође, публиковани су и паразитоиди који су добијени из њихових гала.

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