

Original article (Orijinal araştırma)

**First record of *Alloxysta victrix* (Westwood, 1833)
(Hymenoptera: Figitidae: Charipinae) from Turkey**

Türkiye'den *Alloxysta victrix*'in ilk kaydı

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Abstract

Alloxysta victrix (Westwood, 1833) is here reported for the first time in Uşak province, western Turkey. As a cosmopolitan species it has been cited in all biogeographical regions and in neighboring countries of Turkey. This species emerged from turnip leaves infected by *Athalia* sp. (Hymenoptera: Tenthredinidae). Details about this new record is given as well as images of the morphological features which characterize the species.

Keywords: *Alloxysta victrix*, Charipinae, Turkey

Öz

Alloxysta victrix (Westwood, 1833) ilk kez bu çalışmayla Türkiye'nin batısında bulunan Uşak ilinde tespit edilmiştir. Bu tür, Türkiye'nin komşu ülkeleri de dahil daha önce varlığı tespit edilen bölgelerde, kozmopolit bir tür olarak ifade edilmiştir. Bu çalışmada, *Athalia* sp. (Hymenoptera: Tenthredinidae) tarafından bulaşık olan şalgam yapraklarından elde edilmiştir. Türe özgü karakteristik özellikler ve tür hakkında detaylar verilmiştir.

Anahtar sözcükler: *Alloxysta victrix*, Charipinae, Türkiye

Introduction

The Charipinae (Hymenoptera: Cynipoidea: Figitidae) are very small wasp, with shiny and smooth body, characterized by having very few diagnostic features which sometimes make very difficult separate between species (Ferrer-Suay et al., 2012a; Ferrer-Suay et al., 2012b; Ferrer-Suay et al., 2012c). The subfamily is subdivided into eight valid genera: *Alloxysta* Förster, 1869 (cosmopolitan), *Phaenoglyphis* Förster, 1869 (cosmopolitan), *Lytoxysta* Kieffer, 1909 (North America), *Lobopterocharips* Paretas-Martínez & Pujade-Villar, 2007 (Nepal), *Dilyta* Förster, 1869 (cosmopolitan except Australia), *Apocharips* Fergusson, 1986 (Eastern Palaearctic and Neotropics), *Dilapothor* Paretas-Martínez & Pujade-Villar,

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Received (Alınış): 06.02.2019

Accepted (Kabul edilmiş): 09.07.2019

Published Online (Çevrimiçi Yayın Tarihi): 30.09.2019

2006 (Australia) and *Thoreauana* Girault, 1930 (Australia). Of these, *Alloxysta* is the most abundant and widespread genus, being cited in all the biogeographical regions (Ferrer-Suay et al., 2012a; Ferrer-Suay et al., 2012b; Ferrer-Suay et al., 2012c).

Charipinae are related to aphids and act as hyperparasitoids, meaning that their presence disrupts the correct biological control performed by the primary parasitoids. They are biologically characterised as being hyperparasitoids of aphids via Aphidiinae (Hymenoptera: Ichneumonoidea: Braconidae) and Aphelininae (Hymenoptera: Chalcidoidea: Aphelinidae), and hyperparasitoids of psyllids via Encyrtidae (Hymenoptera: Chalcidoidea) (Menke and Evenhuis, 1991). According to van Veen et al. (2001), hyperparasitoids can reduce the efficiency of primary parasitoids on their hosts in at least three ways: (i) primary parasitoid mortality, (ii) indirectly by the growth rate of the aphid population, and (iii) the propensity for primary parasitoids to disperse.

This species has been collected from Uşak province of Turkey. This means the first record of *A. victrix* in Turkey. In this paper was given some information about the collection data, hosts and images of the specimen.

Material and Methods

The specimens were collected from a single turnip field of 0.1 ha in Kayağıl village (38°37'19"N, 29°19' 17" E, 875 m) of Uşak on early October (02/10/2018).

The turnip leaves bearing the aphid colonies was gently cut, directly placed within transparent plastic boxes, and covered with mesh for ventilation. The boxes were kept at room temperature until emergence of the adult hyperparasitoids. Captured species were directly dropped into 75% ethanol for preservation and identification.

Specimens were studied using a stereo microscope (NIKON SMZ-1) and environmental scanning electron microscope (FEI Quanta 200 ESEM) belonging to the scientific technical services of the University of Barcelona. The field-emission gun environmental scanning electron microscope was used for high-resolution imaging without gold-coating of the specimens. The image of *A. victrix* was taken through a stereo microscope (Leica ez4) with mobile phone.

Results and Discussion

Alloxysta victrix Westwood (1833)

It was obtained one male individual from the collected samples. This species emerged from turnip leaves infected by *Athalia* sp. (Hymenoptera: Tenthredinidae). Probably the leaves have aphids as well as other hosts.

Material examined: Uşak, Kayağıl village, 38°37'19"N, 29°19' 17" E, 875 m, 02/10/2018, 1 ♂, ex: *Brassica rapa* subsp. *rapa* L., leg. Zengin.

Distribution: Andorra (Ferrer-Suay et al., 2012c); Algeria (Ferrer-Suay et al., 2015a); Argentina (Díaz et al., 2011); Asia (Japan) (Ferrer-Suay et al., 2013b); Australia (Girault, 1932); Austria (Girault, 1860; Hellén, 1963); Belgium (Fabianus, 1900); Brazil (Peronti et al., 2007); Canada (Fitch, 1861); Canary Island (Ferrer-Suay et al., 2013c); Chile (Guerra et al., 1998); China (Ferrer-Suay et al., 2016); Corsica (Ferrer-Suay et al., 2013d); Cyprus and Czech Republic (Ferrer-Suay et al., 2018); Denmark (Ferrer-Suay et al., 2018); England (Westwood, 1833; Curtis, 1838; Cameron, 1883; Dalla Torre & Kieffer, 1910; West et al., 1998; Müller et al., 1997; van Veen et al., 2001); Finland (Hellén, 1963); France (Kieffer, 1902a; Kieffer, 1902b; Kieffer, 1904; De Gaulle, 1908); Germany (Hartig, 1840; Hübner et al., 2002; Höller et al., 1993); Greenland (Buhl, 1997); Hungary (Dalla Torre & Kieffer, 1910; Fülöp et al.,

2010); Iran (Ferrer-Suay et al., 2018); Ireland (O'Connor & Nash, 1997); Israel (Argaman, 1988); Italy (Pagliano, 1995); Lappland (Zetterstedt, 1838; Hellén, 1963); Madeira (Borges et al., 2008; Ferrer-Suay et al., 2012c); Malta (Ferrer-Suay et al., 2018); Mexico (Ferrer-Suay et al., 2013d); Morocco (Ferrer-Suay et al., 2013d); New Zealand (Valentine, 1975; Ferrer-Suay et al., 2012c); Norway (Hellén, 1966; Westrum et al., 2010); Poland (Kierych, 1979; Krawczyk et al., 2009); Portugal (Ferrer-Suay et al., 2018); Romania (Ionescu, 1969; Feraru & Mustata, 2005; Ferrer-Suay et al., 2018); Russia (Belizin, 1962; Hellén, 1963; Bokina, 1997); Scotland (Cameron, 1883); Spain (Torrás-Casals, 1996); Sweden (Thomson, 1862; Thomson, 1877); The Netherlands (Hellén, 1963; Andrews, 1978; Ferrer-Suay et al., 2018); Switzerland (Ferrer-Suay et al., 2018); Tunisia (Ferrer-Suay et al., 2014); USA (California) (Sullivan & van den Bosch, 1971); USA (Iowa) (Mertins, 1985); USA (Massachusetts) (Kieffer, 1909); USA (New York) (Fitch, 1861); Wales (Forshage et al., 2017).

Diagnosis: *Alloxysta victrix* is mainly characterized having a big closed radial cell being 3.0 times as long as wide (Fig. 1a), pronotal carinae present (Fig. 1e), propodeal carinae absent lacking setae on longitudinal areas where carinae are present in other Charipinae species (Fig. 1f), male and female with the beginning of rhinaria in F3, F1 longer than pedicel and F2, F2-F4 subequal (Fig. 1b), F1-F3 curved in male. It is similar to *A. consobrina* (Zetterstedt, 1838), but they can be differentiated by the proportion between flagellomeres: F2-F4 subequal in length in *A. victrix* while F2 subequal to F3 and F3 shorter than F4 in *A. consobrina*; size of radial cell: 3.0 times as long as wide in *A. victrix* but 2.7 times in *A. consobrina* and grade of propodeal pubescence: in *A. victrix* the propodeum lacks setae at the longitudinal area where the carinae are present in Charipinae while *A. consobrina* has the propodeum completely covered with dense setae.

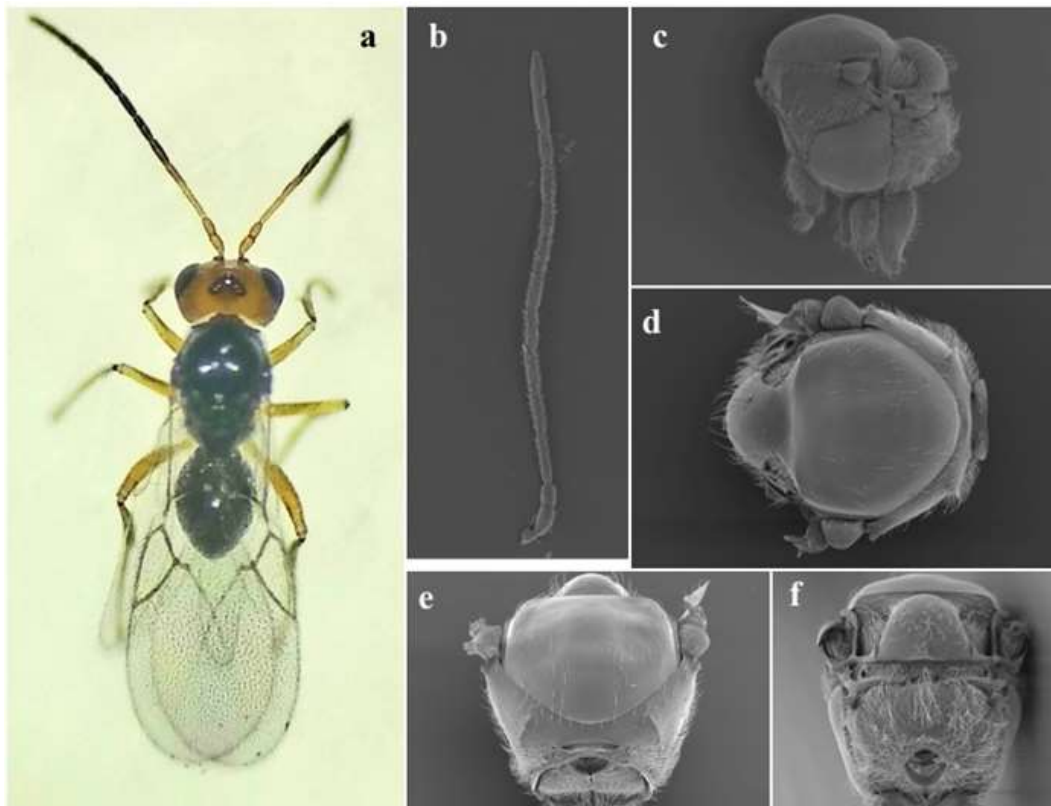


Figure 1. Main morphological features of *Alloxysta victrix* (Westwood, 1833): a) dorsal habitus of the specimen studied; b) antenna; c) lateral view of mesosoma; d) dorsal view of mesosoma; e) pronotum; f) propodeum.

New record from Turkey.

Alloxysta victrix was the first species described within subfamily Charipinae. It has been transferred to different genera over the years and this species is one of the most complex taking into account the number of synonymy that encompasses (Ferrer-Suay et al., 2012a). *Alloxysta victrix* is a cosmopolitan species which means that it has been cited in all biogeographical regions and also in neighboring countries of Turkey (Ferrer-Suay et al., 2012a, 2018).

The information of Charipinae in Turkey is very few. So far, three other species have been cited in this country: *A. consobrina* (Ferrer-Suay et al., 2018) *A. pusilla* (Kieffer, 1902) (Ferrer-Suay et al., 2018) and *Phaenoglyphis villosa* (Hartig, 1841) (Ferrer-Suay et al., 2018). This could reflect that the subfamily is well present in this country, at least for *Alloxysta* and *Phaenoglyphis* genera, but it is necessary more collections to improve the knowledge of its real distribution. As it has been already stated in a previous works of these authors (Ferrer-Suay et al., 2015b), it is very important to continue with collections and studies based on subfamily Charipinae to really know their distribution and host patterns. Our knowledge it is still partial in this way; we still need information to elucidate the Charipinae distribution patterns.

Acknowledgements

This research was supported by the project CGL2014-56151-P of the Ministerio de Ciencia e Innovación of Spain and the grant FJCI-2014-21120 of the Ministerio de Economía, Industria y Competitividad of Spain.

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