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A New Dipteran Parasitoid of Rose Sawfly from Turkey: *Vibrissina turrita* (Meigen, 1824)

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Abstract

Aim of study: The aim of this study was to determine the parasitoid species of, *Arge ochropus* (Gmelin, 1790), which is an important pest of culture and wild roses.

Area of study: *Arge ochropus* larvae were collected from *Rosa canina* in Bartın province.

Material and Methods: Larvae collecting damages on *Rosa canina* species, which are distributed in different localities and were brought to the laboratory. Observations were continued and photographed under a microscope.

Main results: *Arge ochropus* (Gmelin, 1790) is a significant pest of cultivated and wild roses in Turkey. Leaf surface is consumed as a result of intense damage of larvae and this affects growth and blooming in the plant. It was observed that the larvae collected from the field were infected by a new parasitoid in the laboratory. This tachinid parasitoid was defined as *Vibrissina turrita*.

Research highlights: *Vibrissina turrita* (Meigen, 1824) was detected in Turkey as a Tachinidae fauna and *Arge ochropus* parasitoid for the first time in this study.

Keywords: *Vibrissina turrita*, new record, Tachinidae, parasitoid**,** *Arge ochropus,* Turkey

Türkiye' den Gül Yaprak Arısının Yeni Bir Parazitoiti: *Vibrissina turrita* (Meigen, 1824)

Öz

Çalışmanın amacı: Kültür ve yabani güllerin önemli zararlısı *Arge ochropus* (Gmelin, 1790) yaprak arısının, parazitoid türünün tespiti amaçlanmıştır.

Çalışma alanı: *Arge ochropus* larvaları Bartın ilinde *Rosa canina* üzerinden toplanmıştır.

Materyal ve Yöntem: Farklı lokalitelerde yayılış gösteren *Rosa canina* türleri üzerinde zarar yapan larvalar laboratuvara getirilerek, gözlemlere devam edilmiş ve mikroskop altında incelenerek fotoğraflanmıştır.

Sonuçlar: Arge ochropus Türkiye'de kültür ve yabani güllerin önemli bir zararlısıdır. Larvaların yoğun zararı sonucu yaprak yüzeyi tüketilir, bitkide büyüme ve çiçeklenmede etkili olur. Araziden toplanan larvaların laboratuvarda yeni bir parazitoit tarafından enfekte edildiği gözlemlenmiştir. Bu tachinid parazitoid *Vibrissina turrita* olarak tanımlanmıştır.

Önemli vurgular: Vibrissina turrita (Meigen, 1824), bu çalışmada Türkiye Tachinidae faunası ve *Arge ochropus* parazitoiti olarak ilk kez tespit edilmiştir.

Anahtar sözcükler: *Vibrissina turrita*, yeni kayıt, Tachinidae, parazitoid, *Arge ochropus,* Türkiye

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Introduction

Arge ochropus (Gmelin, 1790) is a species that his highly dispersed and abundantly found in Turkey (Çalmaşur and Özbek, 2006). Çalmaşur and Özbek (2013) and Baş (1973) report that this species is a pest for roses. Özbek and Çalmaşur (2005) and Özbek and Yıldırım (2014) indicate that the species creates damage in cultivated and wild roses. As we state in our study, Yıldırım and Eroğlu (2015) found it on rosehip. Due to intensive damage by larvae, leaves are skeletonized and this affects growth and blooming in the plant (Figure 1).

The number of tachinidae species in the world is 1552 in about 10,000 palearctic areas worldwide, and about 750-800 species in Europe (Ziegler, 1992). Kenan Kara (2002) mentions 204 species of Tachinidae in Turkey. In the study conducted in 2008 by Korkmaz in the Western Black Sea Region, 23 Tachinidae species were detected, and these included 9 new entries.

Figure 1. Larvae damage on leaf.

Tachinidae species live as endoparasitoids in lepidoptera larvae and pupa, and in the nympha and adults of heteroptera and orthoptera species, as well as different stages of live in Hymenoptera and Coleoptera species, and they play an important role in regulating the population of host insect species (Oğurlu, 2000; Tschorsnig and Herting, 1994).

They leave their eggs on the host's body or food, and the larvae hatching from the eggs start feeding by entering inside the host species. After the development of the pupa in the shape of a cube made out of the last larvae skin is complete, adult individuals exit (Oğurlu, 2000).

Vibrissina turrita's hosts are generally species from Tenthredinidae and Argidae families. They produce at least two generations in Europe from the middle of June to the middle of October (Tschorsnig & Herting, 1994).

The first-and second-instar larvae feature closely clustered posterior spiracles, at the peritreme, have a process like a knifeblade function is to pierce the large tracheal trunks of their victims. The posterior stigma of the dipteran larvae are then introduced into the aperture thus pierced so as to gain access to the host's air supply. Pupation takes place within the victim's inner cocoon. The aperture made by the mature larva in the inner cocoon is circular in shape and with clear-cut edges while that at the cephalic pole of the outer cocoon is smaller and with rough edges. The puparium emerges with the cephalic cap through the circular aperture, the edges of which appear to be invaginated (Campadelli, 1997). *Vibrissina turrita* (Meigen) has anal hooks and develops in the host midgut (Shima, 2003). *Vibrissina* group that injects larvae directly into the host with a sickle-shaped ovipositor (Shima, 1983).

Vibrissina turrita was found as a dominant parasitoid in *Arge pullata,* which is a birch pest (Li, Sheng, Sun & Luo, 2012). Nagasaka (1988) reported the species *Athalia rosae* as a new host of *V. turrita*.

Materials and Methods

During field studies in the province of Bartın in the year 2010, 4 *A. ochropus* larvae feeding on *Rosa canina* on a 25-m altitude at the coordinates 41°37′09″N, 32°19′07″E were brought to the laboratory with their host and started to be observed. As a result of pupa processes, 2 adult flies exited on the day 20.04.2010.

Result

It was observed that the larvae collected from the field were infected by a new parasitoid in the laboratory. This tachinid parasitoid was defined as *Vibrissina turrita*. *Vibrissina turrita* (Meigen, 1824) was detected in Turkey as a Tachinidae fauna and

Arge ochropus parasitoid for the first time in this study.

Subfamily: Exoristinae

Tribe: Blondeliini

Vibrissina turrita (Meigen, 1824) ♂ (Figure 2)

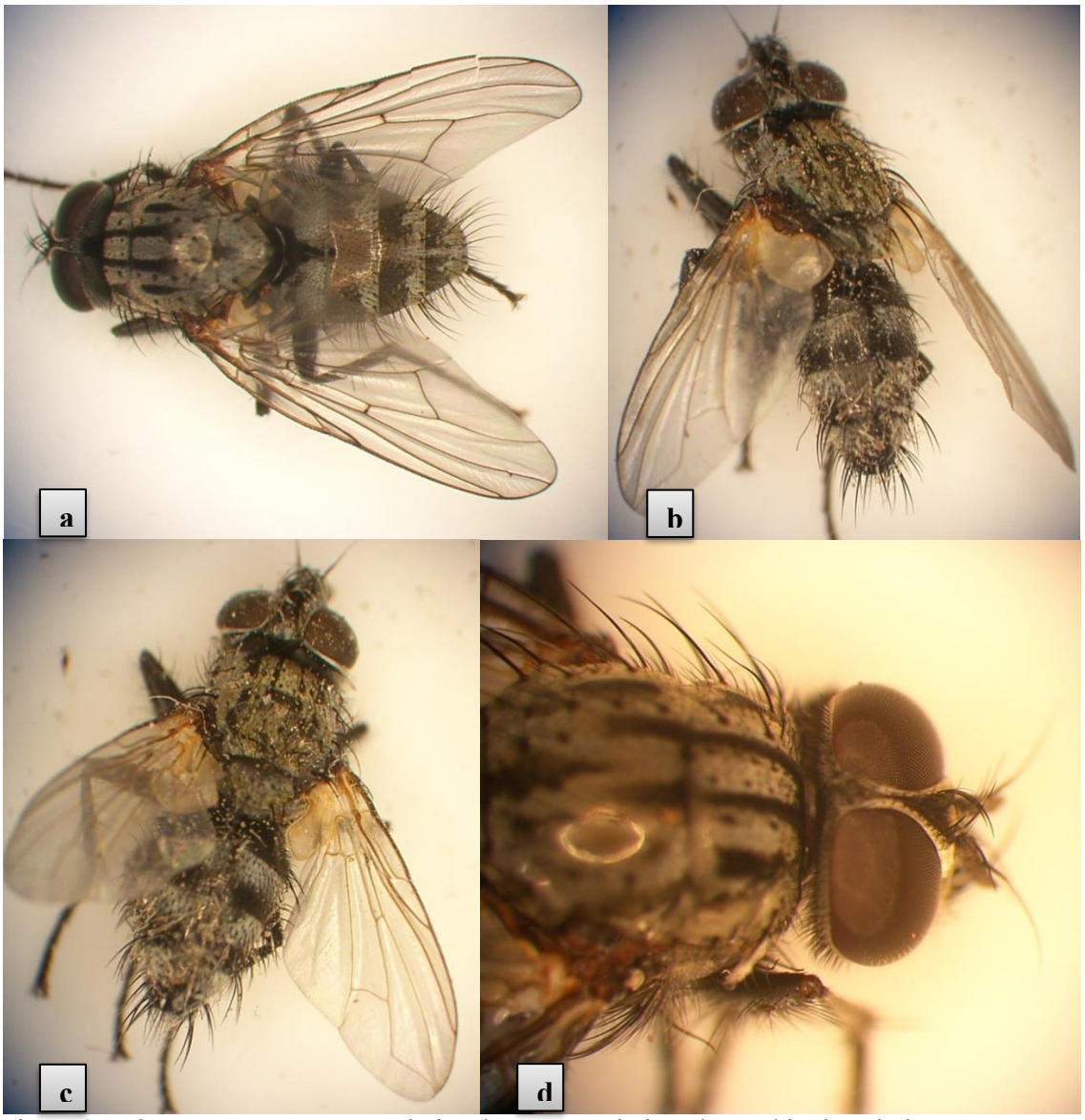

Figure 2. *Vibrissina turrita a.* Dorsal view b. c. Lateral view d. Head in dorsal view

Remarks

3rd antennal segment in males 4.7 - 6.4x, in females 3.9 - 4.5x as long as the 2nd. The abdominal dusting covers ± evenly 3/5 - 4/5 of tergites 3 and 4; the black longitudinal middle stripe is weak and at certain lighting angles sometimes almost extinguished. The bristlets above the vibrissa rise to 1/2 - 4/5 of the facial ridges. Males: frons 0.63 - 0.88x as wide as one eye, without oe; anterior claws about as long as the last tarsal segment (Tschorsnig & Herting, 1994)

Distribution

Andorra, Austria, Bulgaria, Czech Republic, French mainland, Germany, Greek mainland, Hungary, Italian mainland,

Northwest European Russia, Poland, Serbia, Slovakia, Sweden, Switzerland, The Netherlands, Yugoslavia (URL-1, Hubenov, 2008)

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References

Baş, R. (1973). Türkiye'de orman ağaçlarında zarar yapan zar kanatlılar (Hymenoptera) üzerinde araştırmalar [Studies on Hymenoptera associated with forest trees in Turkey]. –Orman Bakanlığı Orman Genel Müdürlüğü Yayınları (Publications of the General Directorate of Forestry) No: 570, Seri No: 23, 169 pp.

Campadelli, G. (1997). Notes on the biology of *Vibrissina turrita* (Meigen) (Dipt.:Tachinidae) on the *Arge ochropus* Gmel. (Hym.: Argidae) host. *Bollettino dell'Istituto di Entomologia "Guido Grandi" della Università degli Studi di Bologna* 51(1), 161– 170.

Çalmaşur, Ö. & Özbek, H. (2006). Check-list of the Argidae fauna (Hymenoptera: Symphyta) of Turkey. *Zoology in the Middle East*, 39(1), 89-96.

Hubenov, Z. (2008). Composition and zoogeographical characteristics of the family Tachinidae (Diptera: Insecta) in Serbia and Bulgaria. – Advances in Arachnology and Developmental Biology. Papers dedicated to Prof. Dr. Božidar Ćurčić. S. E. Makarov & R. N. Dimitrijević (Eds.). Inst. Zool., Belgrade; BAS, Sofia; Fac. Life Sci., Viena; SASA, Belgrade & UNESCO MAB Committee, Serbia. Viena–Belgrade–Sofia, Monographs, 12, 375-394.

Ichiki, R. & Shima, H. (2003). Immature life of *Compsilura concinnata* (Meigen) (Diptera: Tachinidae). *Annals of the Entomological Society of America* 96(2), 161-167.

Kara, K. (2002). Contributions to the Turkish Tachinidae (Insecta, Diptera), *Zoology in the Middle East*, 27(1), 118-119

Korkmaz, Y. (2007). Batı Karadeniz Bölgesi Tachinidae (Hexapoda: Diptera) Türleri Üzerinde Faunistik Çalışmalar. MSc, Gaziosmanpaşa University, Tokat, Turkey (in Turkish).

Li T, Sheng M-L, Sun S-P, & Luo, Y-Q. (2012). Parasitoids of the sawfly, *Arge pullata*, in the Shennongjia National Nature Reserve. *Journal of Insect Science* 12, 97.

Nagasaka, K. (1988). A New host of *Vibrissina turrita* (Diptera: Tachinidae) in Kyoto, Japan. *Kontyu*, Tokyo 56(3), 522.

Oğurlu, İ. (2000). Biyolojik Mücadele. Süleyman Demirel Üniversitesi Yayınları No: 8. Isparta, Türkiye, 440p.

Özbek, H. & Çalmaşur, H. (2005). A review of insects and mites associated with Roses (*Rosa* spp.). – *Acta Horticulturae* (ISHS) 690:167–174.

Özbek, H. & Yıldırım, E. (2014). *Meyve, bağ, bazı orman ve süs bitkileri zararlıları.* Atatürk Üniversitesi Ziraat Fakültesi Yayınları No: 247, Ziraat Fakültesi Ofset Tesisi, Erzurum, 285 s.

Shima, H. & Hara, K. (2016). Tachinidae (Insecta, Diptera) of Saitama Prefecture. *Bulletin of the Kyushu University Museum*, No.14, pp.1-36.

Shima, H. (1983). Study on the Tribe Blondeliini from Japan (Diptera, Tachinidae). IV. A revision of the genus *Vibrissina* Rondani. *Kontyu* 51: 635-646.

Tschorsnig, H.P. & Herting, B. (1994). Die Raupenfliegen (Diptera: Tachinidae) Mitteleuropas: Bestimmungstabellen und Angaben zur Verbreitung und Okologie der einzelnen Arten.Stuttgarter Beitrage zur Naturkunde (A) 506: 1-170. Online authorized version of English translation by Rayner R., C.Raper, H.P. Tschorsnig and Herting B. 2001: The Tachinids (Diptera: Tachinidae) of Central Europe: Identification Keys for the Species and Data on Distribution and Ecology http://tachinidae.org.uk/site/downloads.php

URL-1. (2017). http://www.fauna-eu.org/cdm_dataportal/taxon/825c0f2d-1eed-4777-bf8c-1ebce17a5420#distribution

Yıldırım, E. & Eroğlu, Z. (2015). Atatürk Üniversitesi (Erzurum) Yerleşkesinde Odunsu Bitkilerde Bulunan Zararlı Böcek Türleri. *Atatürk Üniversitesi Ziraat Fakültesi Dergisi*, 46 (1), 29-37.

Ziegler, J. (1992). Zur systematik und Biologie europaischen Raupenfliegen (Dipt: Tachinidae). Nachr. Dt. Ges. allg. angew. *Entomology*, 6, 148- 149.