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FIRST RECORD OF *ADONTOMERUS AMYGDALI* (BOUCEK, 1958) (HYMENOPTERA, TORYMIDAE): A PARASITOID OF THE ALMOND FRUIT WASP, *EURYTOMA AMYGDALI* ENDERLEIN, 1907 (HYMENOPTERA, EURYTOMIDAE) IN ERBIL PROVENCE, IRAQ

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ABSTRACT

Adontomerus amygdali (Boucek, 1958) (Hymenoptera, Torymidae) is recorded for the first time in Iraq, parasitizing almond fruits wasp, *Eurytoma amygdali* Enderlein, 1907 (Hymenoptera, Eurytomidae) infesting fruits of almond trees *Prunus dulcis* (Mill.) D. A. Webb (=*Amygdalus communis* Linn.) growing in Koysinjaq district, Erbil, Iraq. A short morphological description of this species is presented.

Key wards: *Adotomerus amygdali*, Almond pest, *Eurytoma amygdali*, Iraq, Parasitoid.

INTRODUCTION

The almond fruit wasp *Eurytoma amygdali* Enderlein, 1907 (Hymenoptera, Eurytomidae) is one of the most important pest of almond, *Prunus dulcis* (Mill.) D. A. Webb *(=Amygdalus communis* Linnaeus) (Rosaceae); this pest is a widely distributed insect throughout almond growing areas in the southeastern part of Europe, some of the countries of the former Soviet Union and the Middle East countries (Syria, Turkey, Iran, Lebanon and Cyprus) (Noyes, 2017). It was first recorded for Iraq by Hussain (1957) from almond trees, *Prunus dulcis* growing in the northern part of Iraq, in addition it affects apricot, *Prunus armeniaca* L. and plum *Prunus domestica* L. in Mosul and Baghdad (Al-Ali, 1977). It causes a great reduction in yield, the percentage of infestation and damage losses to almond fruits were estimated to be 23.2% and 18.8% respectively, in 2012 (Mohammed, 2013).

Four species belonging to three families of Hymenoptera: Eulophidae, Pteromalidae and Torymidae and two belonging to Acarina family Pyemotidae have been recorded to parasitize almond fruit wasp throughout the world (Noyes, 2017). These species were the eulophid, *Aprostocetus bucculentus* (Kostjukov, 1978) in Turkey and the former USSR (Graham, 1978); Iran (Yefremova *et al*. (2007); Syria (Abo Alsel, 2010), the pteromalid, *Gogoliza bademia* Doganlar, 2004 in Turkey (Doğanlar and Bolu, 2004); Iran (Lotfalizadeh and Gharali, 2008), Syria (Abo Alsel, 2010), and the torymid *Adontomerus amygdali* (Boucek, 1958) in Jordan (Boucek,1958),Turkey (Doganlar *et al*., 2006), Syria (Abo Alsel, 2010), *Torymus eurytomae* (Puzanowa-Malysheva, 1936) (= *Syntomaspis eurytomae*) in Russia (Puzanowa-Malysheva, 1936), Ukraina (Tertyshny, 1997), U.S.A.(Herting, 1977). The pyemotid species were

Pyemotes muraiae Mahunka and Mahunka-Papp (1998) from Hungary (Mahunka and Mahunka-Papp (1998) and *Pyemotes amygdale* Cobanglu and Dogaanlar (2006) in Turkey (Cobanglu and Dogaanlar, 2006).

The aim of this study is to determine *Adontomeros amygdali* (Boucek, 1958) as a parasitiod of almond fruits wasp, *Eurytoma amygdali* Enderlein in Iraq.

MATERIALS AND METHODS

In this study, specimens of parasitoids were reared by the second author from the larvae of almond fruit wasp *Eurytoma amygdali* feeding inside fruits of almond *Amygdalus communis* Linn. in Kanikand (Chinarok) village at Koysinijaq district, Erbil Province. A total of 20 adult parasitoids (17 females and 3 males) were collected on May 2012. It was identified as *Adotomerus amygdali* (Bouceck, 1958) (Hymenoptera,Torymidae) according to keys and description given by (Boucek, 1958; Peck *et al*., 1964; Grissell, 1995) .

RESULTS AND DISCUSSION

This investigation is presented the first record of *Adontomerus amygdali* (Boucek, 1958) parasitizing *Eurytoma amygdali* that infested fruits of almond in Erbil province, Iraq. According to available literatures it was revealed that *Adotomerus amygdali* (Bouceck, 1958) was first described by Boucek from the fallen fruits of *P. dulcis* (Rosaceae) infested with *Eurytoma amygdali* (Eurytomidae) from Jordan in 1958, under the name *Plastotorymus amygdali* Boucek, 1958. Later Boucek (1965) transferred this species to the genus *Paraholaspis* Masi, 1921 and in 1976 to the genus *Antistrophoplex* Crawford, 1914 (now a synonym of *Microdontomerus* Crawford, 1907); then Grissell (1995) placed this species in the genus *Adontomerus* Nikolskaya, 1955 based on its partially developed occipital carina, single anellus, and wing venation and listed it within his new tribe Microdontomerini of the subfamily Toryminae.

This parasitoid is known as gregarious ectoparasitoid which attacks the fourth instar larvae of *E. amygdali* and was observed by Doganlar *et al*. (2006) to be the most effective hymenopterous parasitoid of former species in Turkey.

Diagnostic characters:

The parasitoid *Adontomerus amygdali* (Boucek, 1958) is easily recognized from the other species of *Adontomerus* by the following characters:

Hind femur ventrally not clearly notched; fore femur broadly widened. Fore wing with marginal vein three times as long as stigmal vein; antenna with funicular segments quadrate hardly transverse; ovipositor longer than thorax and gaster.

The following is a brief description concerning this parasitoid:
Female (Pl.1): Body length 3.0-3.5 mm plus 2.5-3.0 mm ovipositor (together 5.5-6.5mm); body color is dark blue to bluish black, especially the face and sides of pronotum; abdomen also almost black; antennae blackish, legs as body bluish black, tibiae somewhat very barely lighter, tarsi yellowish; wings colorless, veins brown, with short brown hairs. Head is slightly wider than thorax before tegula (41: 37), seen from above strongly transverse (41:20; in the middle ratio 41: 15), temple behind eyes are rounded, head from front nearly rounded (41: 34); cheeks beneath not conspicuously converging; face quite flat. Eyes with inner margin slightly diverging in the upper half by shining stripes accompanied with sculpture, otherwise net-like rather fine-meshed in the near the ocellus.

Scape of antenna as long as pedicel, is slightly curved, reaching front edge of the ocellus; pedicel inverted conical shape, about 2.3 times as long as wide, ring segment 1.5 times wider than long; funicular segments quadrate hardly transverse; club a little longer than two preceding segments. Thorax is not too slim (37:57), hairy from above; pronotum conical; scutellum posteriorly, slightly flat with posterior third most prominent; propodeum almost smooth in the middle otherwise with fine-wrinkled-dotted at posterior margin . Hind femur ventrally is not clearly notched; fore femur broadly widened. Fore wing with marginal vein three times as long as stigmal vein. Abdomen is with long, but rather sparsely hairy, ovipositor barely longer than thorax and abdomen.

Male (Pl.2) : Body length is 2.0-2.5mm, and resembling female except for the small abdomen. Antenna is not strongly hairy and not thickened; funicular segments distinctly transversely and more widened toward apex ; first slightly transverse not wider than the pedicel , seventh (last) segment twice wider than long. First tergite of abdomen is with posterior margin incised.

Materials examined:
Koysinijaq (Erbil) 17♀♀, 3♂♂ May. 2012, ex. *Eurytoma amygdali* on *P. dulcis*

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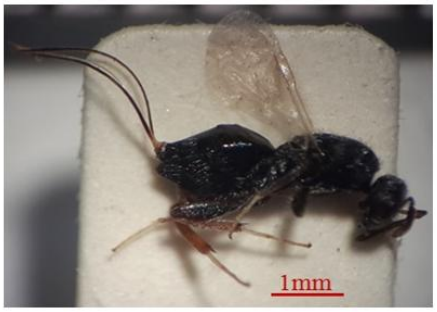

Plate (1): *Adontomerus amygdali* Female

Plate (2): *Adontomerus amygdali* Male

LITERATURE CITED

Abo Alsel, A.A. 2010. Study of some integrated control elements to almond fruit wasp (*Eurytoma amygdale* End.) in almond fields Sweeda in Syria. M. Sc. thesis, Department of Plant Protection, Faculty of Agriculture, Damascus University, 86pp.

Al- Ali , A. S. 1977 . Phytophagous and entomophagous insects and mites in Iraq . *Natural History Research Centre (Iraq) Publication*, No . 33: 142 pp .

Boucek, Z. 1958. *Plastotorymus amygdali*, n.sp., eine neue Torymidae au Mandelkernen des Nahen Ostens. *Acta Entomologica musei nationalis Pragae*, 32: 583- 586.

Boucek, Z. 1965. Synonymic and taxonomic notes on some Chalcidoides (Hymenoptera), with corrections of my own mistakes. *Sbornik Entomologickeho Oddeleni Narodniho Musea v Praze* , 36: 543-554.

Boucek, Z. 1976. Changes in the classification of some African Chalcidoidea. *Journal of the Entomological Society of Southern Africa*, 39: 345-355.

Cobanoglu, S. and Doganlar, M. 2006. A new *Pyemotes* (Acari; Pyemotidae) reared from the Almond Seed Wasp, *Eurytoma amygdali* (Hymenoptera: Eurytomidae) from Hatay, Turkey. *Zoology in the Middle East*, 39: 101-106.

Doğanlar, M. and Bolu, H. 2004. A new species of *Gugolzia* Delucchi and Steffan 1956 (Hymenoptera, Chalcidoidea, Pteromalidae) from Turkey, as a parasite of *Eurytoma amygdali* Enderline 1907 (Hymenoptera, Eurytomidae). *Zoology in the Middle East*, 32: 75-78.

Doganlar , O., Yidirim, A. E. and Doganlar, M. 2006. Natural enemy complex of *Eurytoma amygdali* Enderlein, 1907 (Hymenoptra: Eurytomidae) in Esstern Mediteranean Region of Turkey; notes on their interaction and effectiveness. *Research Journal of Agriculture and Biological Sciences*, 2(6): 282-286.

Graham, M.W.R. De V. 1978. A reclassification of the European Tetrastichinae (Hymenoptera, Eulophidae), with a revision of certain genera. *Bulletin of the British Museum Natural History, Entomology* , 51:1-392.

Grissell, E.E. 1995. Toryminae (Hymenoptera: Chalcidoidea: Torymidae): a redefinition, generic classification and annotated world catalogue of species. *Memoirs on Entomology, International*, 2, 474pp.

Herting, B. 1977. Hymenoptera. A catalogue of parasites and predators of terrestrial arthropods. Section A. Host or Prey/Enemy. Commonwealth Agricultural Bureaux, Institute of Biological Control, 4: iii+ 206 pp.

Hussain, A. A. 1957. Insect pests of Iraq. Directorate General of Agriculture, Baghdad, 188pp. (in Arabic)

Kostyukov, V.V. 1978. Hymenoptera II. Chalcidoidea 13. Eulophidae (Tetrastichinae). In Opredelitel' Nasekomykh Evropeiskoi Chasti SSSR, Tom III, ed. Medvedev, G.S., Leningrad: Nauka, 430- 467.

Lotfalizadeh, H. and Gharali, B. 2008. Pteromalidae (Hymenoptera: Chalcidoidea) of Iran: New records and a preliminary checklist. *Entomofauna*, 29(6): 93-120.

Mahunka, S. and Mahunka-Papp, L. 1998. *Pyemotes muraiae* sp.n. (Acari: Heterostigmata : Pyemotidae): Parazitsing a Hymenoptera larva. *Parasitologia Hungarica*, 31: 47-51.

Mohammed, S.M. 2013. Seasonal occurrence of the different stages of almond fruit wasp *Eurytoma amygdali* End. (Hymenoptera: Eurytomidae) and damage percentage in Koysinjaq district, Erbil province. *Journal of Koya University*, 26:289-298.

Noyes, J. S. 2017. Universal Chalcidoidea Database. World Wide Web electronic publication. Avaliable at: http://www.nhm.ac.uk/chalcidoids (Accessed 6th May, 2017).

Peck, O., Bouček, Z. and Hoffer, A. 1964. Keys to the Chalcidoidea of Czechoslovakia (Insecta: Hymenoptera). *Memoirs of the Entomological Society of Canada*, 34: 120 pp.

Tertyshny, A.S. 1997. Plum eurytoma (*Eurytoma schreineri* Schr.) and its control in eastern Ukraine. *Journal of Fruit and Ornamental Plant Research*, 5(1): 35-41.

Yefremova, Z., Ebrahimi, E. and Yegorenkova, E. 2007. The subfamilies Eulophinae, Entedoninae and Tetrastichinae in Iran, with description of new species (Hymenoptera: Eulophidae). *Entomofauna*, 28(30): 405-440.

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تسجيل جديد لطفيلي *Adontomerus amygdali* (Boucek, 1958) من رتبة غشائية الاجنحة (Hymenoptera, Torymidae) في محافظة اربيل-العراق

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الخلاصة

تم تسجيل تواجد الزنبور الطفيلى *Adontomerus amygdali* (Boucek, 1958) (Hymenoptera, Torymidae) للمرة الاولى في العراق متطفلاً على زنبور ثمار اللوز *Eurytoma amygdali* Enderlein, 1907 (Hymenoptera, Eurytomidae) مصيبا ثمار اللوز *Prunus dulcis* (Mill.) D. A. Webb المزروعة في قضاء كويسنجق- محافظة اربيل، مع وصف موجز لتمييز هذا النوع .