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ORIGINAL ARTICLE

NEW RECORD OF *EURYTOMA SAMSONOWI* VASSILIEV, 1915 (HYMENOPTERA, EURYTOMIDAE) FROM IRAQ

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ABSTRACT

The eurytomid wasp *Eurytoma samsonowi* Vassiliev, 1915 (Hymenoptera, Eurytomidae), has been recorded as a new species infesting apricot seeds in Baghdad. The study was conducted in an apricot orchard in Al-Tarmia District, Baghdad Province, in February 2025. This study could help identify, monitor, investigate further, and control apricot eurytomid wasps.

Keywords: Apricot, *Eurytoma,* Hymenoptera, Identification, Plant parasitoids.

INTRODUCTION

The eurytomid wasp, *Eurytoma* sp. (Hymenoptera: Eurytomidae), is a highly destructive pest of different fruit hosts, including stone fruits such as peach, apricot, plum, nectarine, and almond in the Eastern Mediterranean and Europe; in some susceptible varieties, it can cause yield losses of up to 90% (Mentjelos and Atjemis, 1970; Talhouk, 1977; Arnaudov *et al*., 2020; and Kissayi *et al*., 2025). *Eurytoma* has one generation per year; a fully developed larva overwinters inside the infested stone fruit, typically remaining dry and hard-shelled on the tree like a mummy. By the end of winter, parasitoids break diapause if environmental conditions are favorable for adult emergence and then they move to the pupal stage (Wannassi *et al*., 2023). In spring, adults feed on flower nectar or a sugar solution and mate (Nagamine *et al*., 2023).

However, some individuals may extend diapause for two years or more before completing their life cycle. Mated females then seek newly formed suitable stone fruits for oviposition, often visiting multiple fruits (Tzanakakis *et al*., 1991). Females lay their eggs in immature stone fruit kernels. The newly hatched larva feeds by chewing the contents inside the kernel, eventually consuming all of it during the larval life cycle (Perju, 2002).

This pest is managed through cultural practices, such as collecting and destroying infested kernels, and is commonly controlled with chemical insecticides. Systemic insecticides are

primarily used against newly hatched larvae inside the seed (Wannassi *et al*., 2022). The optimal spraying schedule remains debated; Talhouk (1977) recommended spraying 10-15 days after the first adults emerge, while Mentjelos and Atjemis (1970) and Saeidi (2021) suggested it to be 18-22 days after peak egg-laying, when most eggs have hatched. Adult emergence is typically monitored by placing caged infested apricot kernels from the previous season in the field and counting the emerging adults (Duval and Millan, 2010; Arnaudov *et al*., 2020). Due to differing decisions on when to begin spraying and difficulties controlling adult populations, farmers often apply insecticides during flowering or at inappropriate times, reducing the effectiveness of control efforts (Choi *et al*., 2015). A study by Pittara and Katsoyannos (1985) and Mazomenos *et al.* (2004) showed that female pupal parasitoids release a sex pheromone that attracts males. Field tests using traps baited with this pheromone effectively captured males, providing a reliable method for monitoring adult populations and determining the optimal timing for chemical control (Mazomenos *et al*., 2004).

The study aims to contribute to the description, confirmation of a new record, and illustration of the apricot seed wasp *E. samsonowi*, the first time it has been recorded from Iraq.

MATERIALS AND METHODS

Collection of Specimens: The study was conducted in Al-Tarmia District, Baghdad Province, Iraq, on February 26-27, 2025. The apricot orchard is located at a latitude of 33.6732479 north and a longitude of 44.3614875 east of Baghdad. Mummified apricot seeds were handpicked from the tree, and approximately 30-40 seeds containing larvae of the apricot seed wasp *E. samsonowi* were collected from the ground. These seeds were placed in plastic containers filled with soil and sawdust to allow adult eurytomid wasps to emerge. All emerged adults were initially female; and no males were noticed. A total of 30-40 females were collected and preserved in 75% ethyl alcohol.

Identification and examination: Morphological identification of the specimens was conducted by the Iraq Natural History Research Center & Museum, University of Baghdad, and deposited under museum number HE 40.25. We also used the identification keys of Vassiliev (1915) and Zerova and Fursov (1991) to confirm the identification. Specimens check was further verified by examining apricot seeds under a microscope equipped with a camera at the Plant Protection Directorate, Ministry of Agriculture, Abu Ghraib. Specimens were examined under a stereomicroscope for drawing or photography purposes.

Dissection of specimens: For permanent microscope slides, specimens were prepared by placing them on a thin cork inside a 100 mL beaker filled with hot water at approximately 50°C for 10-15 minutes to soften the parasitoid tissues. Using fine pins, the head, thorax, legs, and gaster were separated. The head and gaster were then placed in small glass vials containing a 10% potassium hydroxide (KOH) solution for 24 hours. Finally, the specimens were washed several times with distilled water before examination.

Antennae, mouthparts, abdominal sclerites, and female genitalia were dissected by lightly pressing the abdominal margin from the ventral side. The dissected parts were passed through a graded ethanol series of 70, 80, 85, 90, and 95% for three minutes at each concentration, then immersed in glacial acetic acid for 1 minute to remove residual alcohol. Specimens were dried on filter paper for approximately half a minute and then mounted on glass slides with a drop of Canada balsam mixed with xylene, followed by the application of a coverslip. The slides were dried on a hot plate at 50℃ for 48 hours and stored in slide boxes until examination.

RESULTS AND DISCUSSION

Synonyms and global distribution

According to the EPPO database (2025), the apricot seed wasp has been assigned *Bruchophagus samsonowi* (Vassiliev, 1915) as a synonym to the valid name *Eurytoma samsonowi* Vassiliev, 1915 (Hymenoptera, Eurytomidae).

E. samsonowi exhibits a geographically restricted distribution. The species of *E. samsonowi* is distributed in Western and Central Asia, where it is considered an economically important pest of stone fruits. Its distribution across African, Asian, and European continents includes Tunisia, China, and India, where it is currently confirmed present and current restricted distribution, as well as in Kyrgyzstan, Pakistan, Tajikistan, Uzbekistan, and Armenia, where *E. samsonowi* has been identified as present, although with no further details (Gaffar and Punjabi, 1990; Wang *et al*., 1998; Wannassi *et al*., 2022). In Iraq, an infestation survey of apricot fruit was conducted in the apricot orchards of Baghdad Province, where infested apricot fruits were found in Al-Tarmia. Apricot fruit infestation was not detected in other areas of Baghdad, Iraq. Continuous surveillance is nonetheless recommended, as global trade in apricot fruits and ongoing climate change may facilitate future range expansion.

Female Description

Body with 6.0-6.2 mm in length (Pl. 1); head and thorax entirely black, whereas the gaster lighter in colour, ranging from reddish- brown to yellowish, with a darkened apex and a brown spot on the upper basal part. Scape entirely or partly red-yellow, and funicle segments black. Coxae black; femora, tibiae, and tarsi with yellow colour.

In dorsal view, head slightly wider than pronotum, and its width exceeds its height by a ratio of 6:5 in the frontal view. Ocelli and compound eyes relatively small, with their longitudinal diameter distinctly shorter than the length of gena. Front has dense and somewhat long seta (Pl. 2A). Mouthparts of *E. samsonowi* chewing-type (Pl. 2B). Antennae inserted above the mid-level of the face, with a deep and well-marked scrobe, which consist of a several distinct parts, including: scape, pedicel, annular, six funicular segments, and two-segmented calva with an average length 1.25–1.50 mm, all of which are longer than wide; first segment approximately twice as long as wide, while the rest segments about 1.5 times as long as wide (Pl. 2C).

Thorax an uneven, pronotum length about 2.5 mm. propodeum has a broad, indistinct median groove and irregular punctures on the lateral margins. Lateroposterior surface of the scutum with an oblique, scutal carina visible, and the posterolateral margin has an angular height. Setae show mixed micro-sculpture, with a few short, erect, dense setae near the tegulae, and scattered short, yellow, erect setae (seen laterally). Mesopleuron: densely packed; epistenal-scrobal sulcus slightly arcuate around the prothorax; sculpture and setae, as described in the scutum, are not obvious. The propodeum is densely setae laterally, and sculpture mixed with setae dorsally similar to that of the scutum.

Forewing (Pl. 3) shows faint dark infuscation, more distinct at the middle; marginal vein short, almost equal to the radial vein, while the post-marginal vein slightly longer.

Fore leg slender-shaped; coxa robust and articulating freely with the thorax; femur moderately thickened; tibia elongated and clothed with fine setae and apically has a distinct spur. tarsi with five segments, terminal tarsomere has a pair of claws. Mid leg: femur slightly elongated and less swollen than the hind femur; tibia elongated and straight; tarsomeres longer than the fore tarsus. Hind leg longer and more robust than the other legs; femur distinctly enlarged; tibia elongated and straight; tarsus has relatively elongated tarsomeres, the terminal tarsomere has a pair of claws (Pl. 4).

Gaster directed upward near the apex, and its length nearly equals the combined length of head and thorax. It composed of distinct and sclerotized tergites, which are separated by shallow intersegmental sutures; 7-9 tergites with densely setae (Pl. 5 A). Dorsal surface smooth to finely punctate with short setae mainly distributed along the posterior margins of the tergites. Dorsally, gaster with dark brown colour to chestnut and slightly lighter towards the final segments. Ovipositor as shown in Plate (5 B).

Plate (1): Lateral view of *Eurytoma samsonowi* (♀) .

Plate (2): Some parts of *E. samsonowi* (♀); (A) Upper side of head, [A- C: Ocelli], (B) Mouthparts, (C) Antenna.

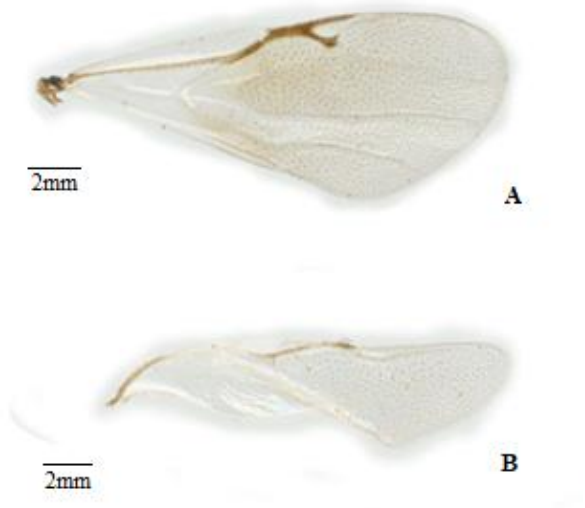

Plate (3): Wings of *E. samsonowi* (♀); (A) Fore wing, (B) Hind wing.

Plate (4): Legs *E. samsonowi* (♀); (A)Fore, (B) Mid, and (C) Hind leg.

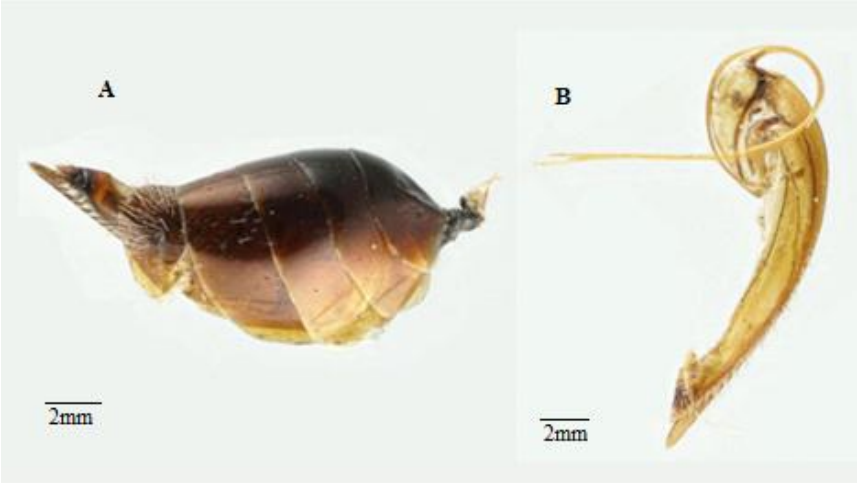

Plate (5): *Eurytoma samsonowi* (♀); (A) Gaster, lateral view, (B) Ovipositor.

CONCLUSIONS

The newly recorded species *E. samsonowi* in Al-Tarmiya District, Baghdad Province, expands its known range as an invasive pest (phytoparasitic insect). This species may be associated with apricot and other stone fruits, and warrants further investigation. Its role- whether plant-parasitic or phytophagous- can have implications for agroecosystems, particularly in relation to fruit seeds. Future surveys should address its host range, seasonal abundance, and potential impact on local agroecology.

CONFLICT OF INTEREST STATEMENT

This work is a part of the requirements of the M.Sc. in Entomology, Department of Plant Protection, College of Agriculture Engineering Sciences, University of Baghdad for the first author. Also, we confirm that there is no conflict of interest with any other party.

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تسجيل جديد لزنبور *Eurytoma samsonowi* Vassiliev, 1915 (Hymenoptera, Eurytomidae) من العراق

نغم محمد خضير و قاسم حسين احمد
قسم وقاية النبات، كلية الهندسة الزراعية، جامعة بغداد، بغداد، العراق.

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الخلاصة

سجل زنبور *Eurytoma samsonowi* Vassiliev, 1915 التابع الى رتبة غشائية الاجنحة Hymenoptera وعائلة Eurytomidae كنوع جديد يصيب بذور المشمش في بغداد. أجريت الدراسة في أحد بساتين المشمش في قضاء الطارمية، محافظة بغداد، في شباط 2025، ويمكن ان تسهم هذه الدراسة في تحديد ومراقبة ومكافحة زنابير Eurytomidae التي تصيب المشمش او الفاكهة ذات النواة الحجرية.