

## New Record of the Species *Phytomyza isais* Hering, 1937 (Diptera:Agromyzidae) in Iraq

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**Abstract.** The result of this study showed species *Phytomyza isais* Hering, 1937 recorded for first time to entomofauna of Iraq, which were collected from Chicory plants (*Cichorium intybus* L.). The synonym of species were supplied from GBIF.

**Keywords.** Agromyzidae, Iraq, Leaf miners, *Phytomyza isais*.

### 1. Introduction

The leaf miners family agromyzidae belong to the order Diptera. The members of this family infested wide range of plants, up to 31 plant families [1].[2] showed that *Phytomyza horticola* infected 34 plant species belonging to 11 plant families of dicotyledons and two types of monocotyledons. [3] indicated in a study conducted that 8 parasites were diagnosed on *Phytomyza horticola*. [4] conducted a survey of some species belonging to the genus *Phytomyza* Fallen in five governorates (Baghdad, Najaf, Karbala , Basra, Dohuk) on various vegetable crops, and the presence of four species belonging to this genus *Phytomyza horticola*, *Ph. atricornis*, *Ph. rufipes*, *Ph. ranunculi* was recorded. [5] conducted a survey and diagnosis of some parasitoids on some genres of the family Agromyzidae the survey revealed the presence

of 8 species within 7 genera belonging to 3 families. The genus *Phytomyza* belong to the subfamily Phytomyzinae which can be diagnosed through the subcostal vein that be atrophied to the costa or continuing as a fold or freely in the cell ,first radial vein reaches the costa in a straight line without deviation [6]. Agromyzidae is distributed all over the world which contains approximately 3200 species [7].

### 2. Material and Methods

The specimens was obtained by collecting plant leaves infected with leaf miners, and then these leaves were placed in Petri dishes after moistened filter papers were placed in them in order to keep the leaves from drying out, then they were left until the adult insect came out. Binocular dissecting microscope was used to examine the specimens, and photos were taken

with a camera microscope Mechanic DX-4K

Mini. The taxonomic key was used by [6,8].

### 3. Adult Description

Body: small in size (1.3-1.7) mm ash-gray with yellow in color (figures 1-3).



**Figure 1.** Lateral view of male.



**Figure 2.** Dorsal view of male.

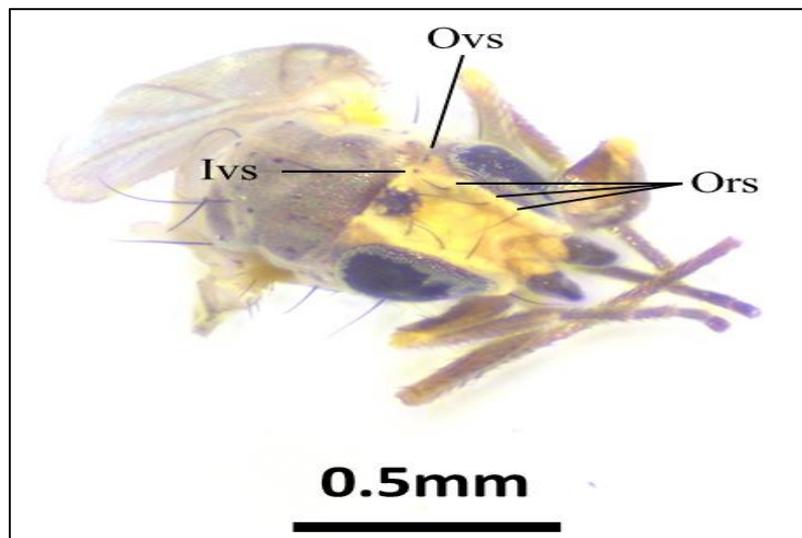


**Figure 3.** Ventral view of male.

### 3.1. Head

Oval with pale yellow in color and width (0.25 - 0.26) mm. Vertex large yellow with setae Inner vertical setae (Ivs) and Outer vertical setae (Ovs). Ocellar triangle black with three yellow ocelli equal and with two pairs setae, Ocellar setae (Ocs) located between ocelli and Postocellar setae (Pos) behind ocelli. Compound eyes black oval. Front yellow in color with a wide rectangular shape at the top.

Orbital plate with three pairs Orbital setae (Ors) and row proclinate orbital setulae. Arista antenna with Scape and Pedicel (Pe) yellow in color but the Flagellum (Fl) black with black Arista hair-like are gradually thinning towards the apex. Face and parafacial area yellow. Vibrissae its a pair of black setae inclinate at the facial ridge base. Gena pale yellow .postgena yellow . Jowls mightily extend rear (figures 4-6).



**Figure 4.** Dorsal view of head showing setae, Ivs, Inner vertical setae; Ovs, Outer vertical setae ; Ors, Orbital setae.

### 3.2. Thorax

#### 3.2.1. Pronotum

Is poorly developed as a narrow strip and closely associated to the mesonotum.

#### 3.2.2. Mesothorax

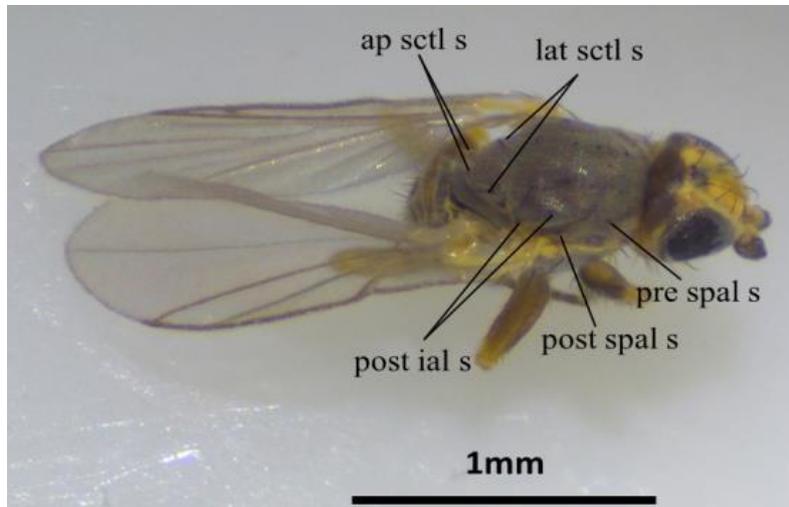
Growing well ash-gray in color. Mesonotum consists of prescutum, scutum and scutellum. Prescutum a transverse and convex sclerite that contains a pair of Dorsocentral setae (Dc s) slightly curved and slanted backwards and one presutural supra-alar seta (pre spal s), Acrostichals (Acr) be few and sparse, Each side merges with the postpronotum that contains one postpronotal seta also notopleuron that contains one notopleural seta. Scutum longer about 1.5 time length than prescutum and contain three pairs dorsocentral setae be curved and slant to the back and which length gradually increases towards the back and two postsutural intra-alar setae (post

ial s) and one postsutural supra-alar seta (post spal s). Scutellum triangular in shape with lateral scutellar setae (lat sctl s) long and straight and apical scutellar setae (ap sctl s) long and convergent at the apical, scutellar setae are the longest in the mesonotum (figure 5).

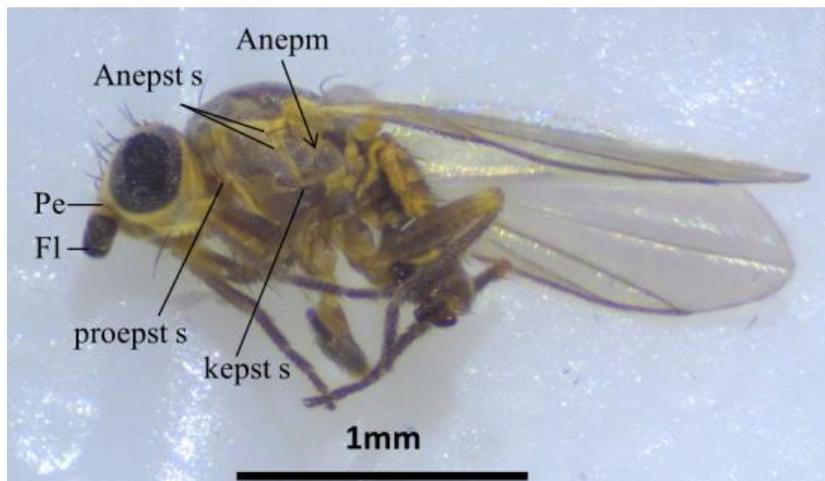
The side view of mesothorax ash-gray with small yellow bar a long higher margins of episternum and anepimeron and consists of proepisternum sclerite that contain one long black Proepisternal seta (proepst s), followed by Anepisternum sclerite which largest lateral sclerite with two Anepisternal setae (Anepst s) and one of them 1.5 time longer the other, below it Katepisternum sclerite triangular in shape with five katepisternal setae (kepst s) four equal in which one of them 3.5 time longer than the others, to the side anepisternum find Anepimeron (Anepm) it large sclerite without setae, below it Meron sclerite without setae, then followed Anatergite and Katatergite (figure 6).

### 3.2.3. Metathorax

Is a reduced segment and closely joined to mesothorax and the first abdominal segment.



**Figure 5.** Dorsal view of thorax showing setae; ap sctl s, apical scutellar setae; lat sctl s, Lateral scutellar setae; post ial s, Postsutural intra-alar setae; post spal s, Postsutural supra-alar setae; pre spal s, Presutural supra-alar setae.



**Figure 6.** Lateral view of thorax showing setae; Anepst s, Anepisternal setae; Anepm, Anepimeron; Fl, Flagellum; Kepst s, Katepisternal setae; Pe, Pedicel; Proepst s, Proepisternal seta.

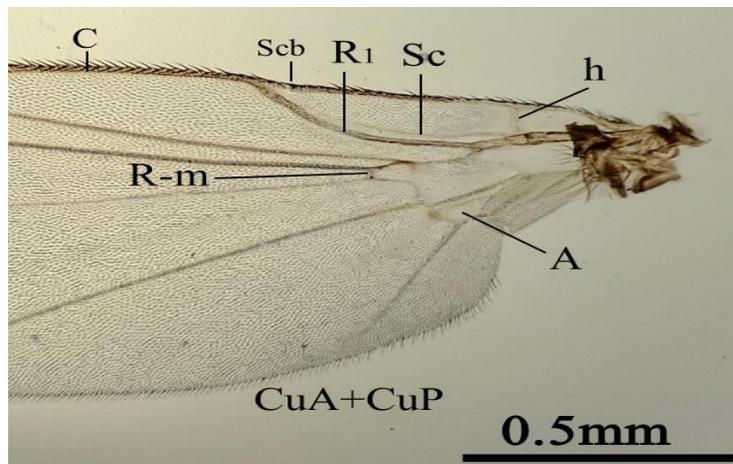
### 3.2.4. Wing

Length 1.5 - 1.7 mm, elongated membranous with narrow base and rounded apex with fusion of some veins, tegula sclerite is a small yellow spherical with one long seta, followed is basecosta its yellow in color with 3 setae and which Costa (C) vein which appears along the anterior margin and end at R2+3 and contain 2 row of dark-brown setae its equal length. As for Subcosta (Sc) vein its very weak and

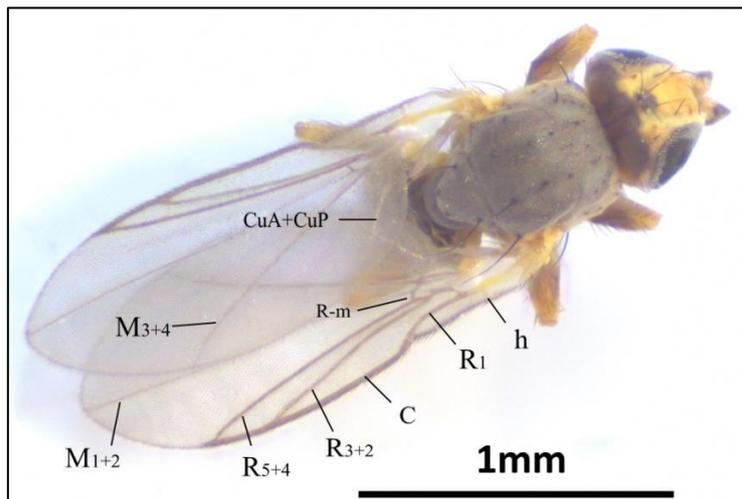
extends from the basal part of the wing parallel to the R1 and expand toward up and reach to the subcostal break (Scb), Subcosta connected to the Costa by humeral (h) cross vein. Radial (R) vein is thick and clear its arises from the stem vein which is yellow in color it branches into two branches at the basal quarter of the wing first branch called the first radial vein (R1) which continues along anterior margin of the wing and then fused with the Costa, as for the second branch it branches into two

branches at the basal third of the wings, second radial vein (R2) which represent the fusion of the second and third branches (R2+3) heading up fused with Costa vein at third quarter of the wing, while third Radial vein (R3) which represents the fusion of the fourth and fifth (R4+5) branches ends at the beginning of the fourth quarter of the wing to fused with Costa vein. Following it Media (M) vein which is connected to the Radial vein by radio-medial cross vein (r-m), Media vein begins at the end of the first basal quarter of the wing and divided into two branches the first (M1) represents the fusion first and second branches

(M1+2) which extends straight to the apex of wing, while second Medial vein (M2) that represents the fusion third and fourth branches (M3+4) and extends to the inner margin of wing at the beginning of the fourth part of the wing. Medial-medial cross vein (m-m) absent. Cubitus (Cu) vein branches into two branches and the Cubitus anterior vein (CuA) surrounds the Anal cell (A) and fused with the posterior vein (CuP) to be (CuA+CuP) vein which is weak and spectral and not reaching the posterior margin of wing. Halter is the modification of hind wing club-shaped with pale yellow in color (figure 7,8).



**Figure 7.** Dorsal view of wing showing Subcosta;A,Anal cell; C,Cosat vein;h,humeral cross vein; R1,first radial vein; R-m, Radio-medial cross vein; Scb,Subcostal break;Sc,Subcosta; CuA+CuP, Cubitatus anterior + posterior vein.

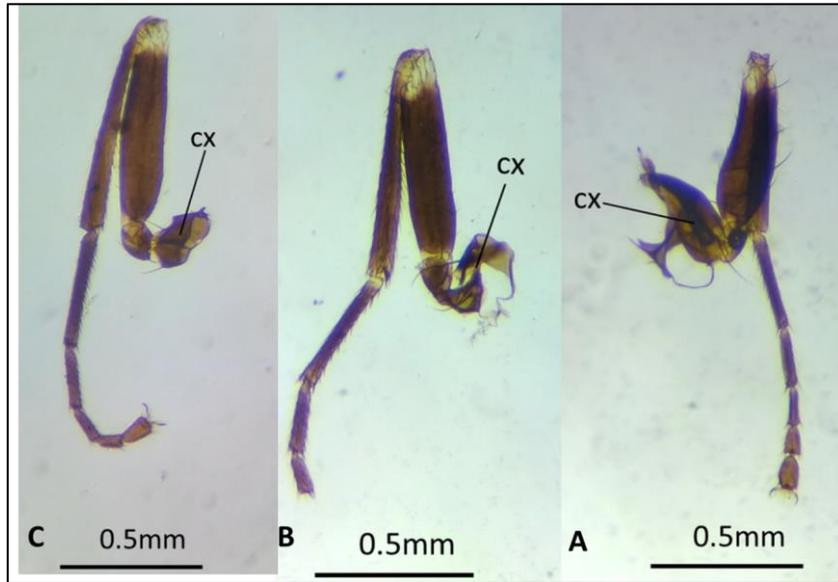


**Figure 8.** Dorsal view of wing showing viens;M1+2,Media first + second vein; M3+4,Media third + fourth vein;R2+3, Radial secon + third vein; R4+5, Radial fourth + fifth vein.

### 3.2.5. Legs

Are similar to each other in color and the shape of their parts with the exception of femur of the fore legs where its wider at the basal third

as well as the shape of coxa where the fore coxa are elongated and the middle are triangular in shape while the hind are pear-shaped (figure 9. A,B,C).



**Figure 9.** Lateral view of legs; A,fore legs; B,mid legs; C, hind legs; cx,coxa

### 3.3. Abdomen

Oval in shaped.tergites (T) and sternites (S),1-6 well developed and distinctly, tergite of the segments 1-2 are fused and color of the tergite of the first segments is completely gray, while the tergite 2-4 is gray with a brownish yellow band, as for the fifth tergite its longer and mostly yellowish brown in color with contain small black central spot, also tergite sixth that be longer and completely brownish yellow in color and all tergites contains three transverse rows of setae each row has 7-8 setae (figure 10).

Sternites 1-4 they are black with brownish yellow stripe and contains row has 5-6 of the setae. The fifth sternite its black in color and that be longest at the abdominal sclerites and contains 5 rows of setae each row has 5-6 setae . As for Sternite sixth a short brownish yellow in color and without setae (figure 11).

The species *Phytomyza ranunculi* (Schrank, 1803) registered in Iraq its similar closely to *Phytomyza isais* Hering, 1936 but diffres from it in color of scutellum where its yellow.

Synonym: *Phytomyza odontitae* Hering, 1949.



**Figure 10.** Dorsal view of abdomen, T, tergite.



**Figure 11.** Lateral view of abdomen, S, sternite.

#### **4. Material Examined**

One specimen male, several infected plant leaves were collected from *Cichorium intybus* L. in Baghdad on 29 November 2021 and the adult came out on 5 December 2021.

#### **5. Distribution**

Southeast Norway, Denmark and some countries in northwestern Europe [9,10].

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