

Identification of some species of Tephritid fly (Tephritidae: Diptera) from Basrah province south of Iraq.

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Abstract

Tephritidae is one of the most important economic insect's families, most species of this family are phytophagous and cause economic damage to crops. Some species of this family were recorded from Baghdad and Samarra provinces; up to now, there is no study on the species found in southern Iraq. The current study was conducted in Basrah province's fields to detect this family's different species and host plants. The samples were collected from four regions of Basra province from different host plants. A total of 130 Tephritid flies were collected from four agricultural regions of Basrah province; the specimens were studied and identified in the Entomology Laboratory of College Science, University of Basrah, photoed by stereo dissecting microscope LEICA EZ 4HD. The samples were identified according to accurate taxonomical keys. Three species of the family Tephritidae were identified, *Goniurellia tridens*, *Trupanea amoena*, *Trupanea stellata*.

Keywords: Tephritid, fruit fly, *Trupanea*, *Goniurellia*, Basrah, Iraq.

Introduction:

Tephritidae is one of the most widespread world families, containing about 4,500 described species and 500 genera worldwide (Pape *et al.*, 2011). The main characteristics of this family, which by it from other Tephritoidae, are: Costa vein has two interruptions, one before the humeral vein and the other at the end of a subcostal vein (Rikhter, 1989).

Most tephritid species are phytophagous and cause economic damage to crops; most tephritid larvae are leaf miners, some species are stem borers, and some live in roots (White, 1988). Some species can be used in a biological weed control program (White & Elson-Haris, 1992). The individuals of fruit flies are characterized

by the long extending ovipositor of the females that is used to lay eggs inside the epidermis of fruits and vegetables, which then provide food for the developing larva (White, 1988). Some species can be used in a biological weed control program (White & Elson-Haris, 1992).

Many species of Tephritidae, especially the subfamily Tephritinae, develop on the flower heads of Asteraceae species (Freidberg & Kugler, 1989). About 1500 fruit fly species are associated with fruits, and more than 250 are economically significant (Li *et al.*, 2013). Some species of Tephritidae infest the flower heads of Asteraceae host plants collectively belonging to several tribes, with or without the induction of galls (Freidberg, 1984)

The individuals of fruit flies are characterized by the long extending ovipositor of the females that is used to lay eggs inside the epidermis of fruits and vegetables, which then provide food for the developing larva (White, 1988). Almost 250 species are associated with plants and vegetables of economic importance from Europe; a few species encourage the formation of galls in the upper or underground parts of stems of Asteraceae. (Freidberg, 1984; Korneyev, 2003).

Faunistic studies on the tephritid fly fauna in Iraq began by Korneyev and Dirlbek(2000); they described two new species *Tephritis mesopotamica* (type locality: Iraq, Samarra), *Tephritis urelliosomima* (type localities: Iraq, Samarra, and Turkmenistan). The species *Trupanea stellate* was recorded for the first time in Iraq; in Salah-ed-Din province, the species *Trupanea amoena* was recorded by Dirblek and Dirlbfkoa (1974) for the first time in Baghdad, whereas *Goniurellia tridens* was recorded for the first time from Iraq, Salah-ed-Din province.

So far, there is no study on the species found in southern Iraq. Hence, the current study is a survey and identification of the species in Basra province, with an explanation of the plant families and collection sites.

Materials and methods:

The samples were collected from four regions of Basra province (Shatt Al-Arab, Abulkhaseeb, Alhartha, Alzubair), during the period from 1 November 2020 to 1 May 2021, by using sweeping nets from different host plants (alfalfa, radish, safflower plant), the samples were preserved in 70% ethyl alcohol, studied and identified in Entomology Laboratory of College Science of Basra province, photoed by sterio dissecting microscope LEICA EZ 4HD. The samples were identified using

accurate taxonomical keys(White, 1988; David & Ramani, 2011).

Results :

The results showed the presence of 3 species belonging to the family Tephritidae distributed in different regions of Basra province. The densities were in Abulkhaseeb district, while the lowest was in Alzubair.

A total of 130 specimens of Tephritid flies were collected from four agricultural regions of Basrah province(Ablkhaseeb, Shat Al-Arab, AL-hartha, Alzubair); the study detected two genus, *Goniurellia* and *Trupanea*, and three species *Goniurellia tridens*, *Trupanea amoena*, and *Trupanea stellata*,

Description of species(for females only):

1- *Goniurellia tridens* (Hendel, 1910)

Distribution: Iraq, Palestine, Saudia Arabia, Iran, Afghanistan, Pakistan, India.

Material examined: 30 males,45 females; Abulkhaseeb, Shat Al-Arab, Alhartha, Alzubair.

G. tridens characterized by the following characteristics: Cell R₄₊₅ usually with 1-3 hyaline dots, the distance between crossveins usually 1.5-2 times as long as r-m crossvein, two brown rays present in cell D, in addition to ray on dm-cu ray (Fig (1).

2- *Trupanea amoena* (Frauenfeld)

Material examined: 30 males, 40 females; Abulkhaseeb, Shat Al-Arab, Alhartha

Vein cu A₁ with a brown stripe from dm-cu to hind margin of wing, the star-shaped mark on a wing usually connected to cell sc by a narrow linear (Fig 2).

3- *Trupanea stellata*

Material examined: 10 males, 20 females; Abulkhaseeb, Shat Al-Arab, Alhartha Vein

CuA₁ entirely within a hyaline area. Star-shaped on wing not connected to cell Sc. (Fig 3).



Fig. 1. Wing of female , *Goniurellia tridens*

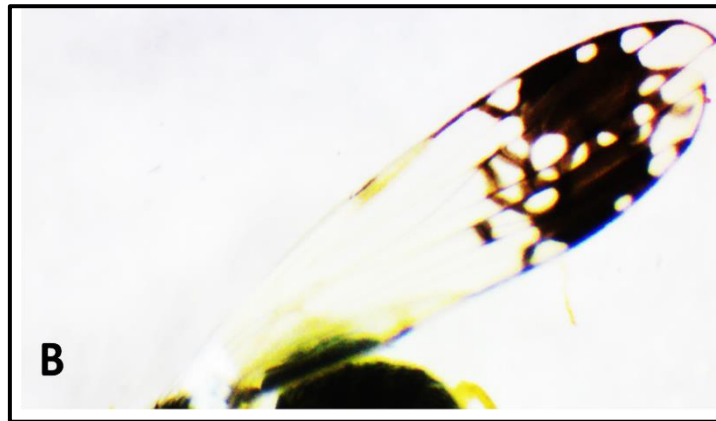


Fig. 2. Wing of female, *Trupanea amoena*

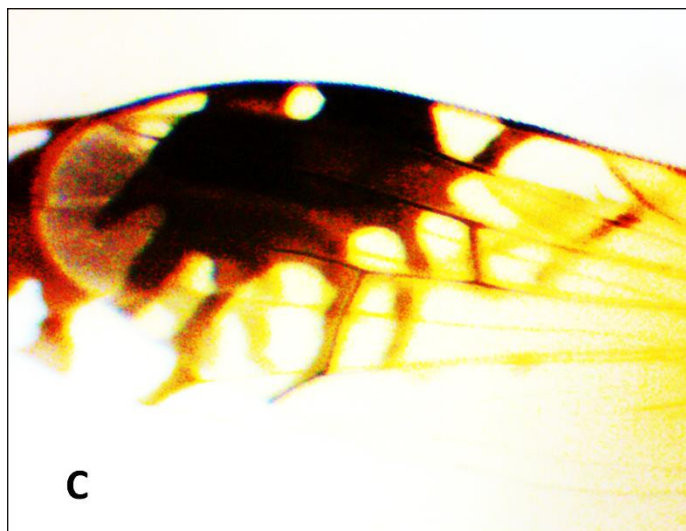


Fig. 3. Wing of female, *Trupanea stellata*.

Comments:

Before this study *Goniurellia tridens*, *Trupanea amoena*, *Trupanea stellata*, have been recorded from the middle of Iraq (Korneyev & Dirlbek, 2000). This is the first record of the three species from southern Iraq.

The distribution of *Goniurellia tridens* in general in Middle Asia, Saudi Arabia, Iran, Afghanistan, Pakistan, India (Freidberg and Kugler, 1989),

Trupanea amoena (Frauenfeld, 1857) was recorded in Iran (Zaitzev, 1947; Gilasian, 2007);, Palestine, Iraq, Syria, Saudi Arabia, and UAE (Norrbon *et al.*, 1999; Korneyev & Dirlbek, 2000; Merz, 2008)

Trupanea stellata (Fuesslin, 1775) was recorded from Iran (Dirlbek, 1980;) South to North Africa, South and center of Europe, Armenia, Palestine, Iraq, Saudi Arabia, India, and Mongolia (Norrbon *et al.*, 1999; Korneyev & Dirlbek).

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تشخيص بعض الانواع العائدة لعائلة Tephritidae رتبة ثنائية الاجنحة (Diptera), من محافظة البصرة جنوب العراق

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المستخلص:

تعد عائلة Tephritidae واحدة من عوائل الحشرات الاقتصادية المهمة, حيث ان اغلب انواع هذه العائلة هي انواع نباتية التغذية وتسبب اضرار اقتصادية للمحاصيل الزراعية. اجريت الدراسة الحالية في حقول محافظة البصرة, لتشخيص الانواع العائدة لعائلة Tephritidae و عوائلها النباتية. شخّصت ثلاثة انواع هي كالتالي: *Goniurellia tridens*, *Trupanea amoena*, *Trupanea stellata* و سجلت كل من الظروف البيئية و العوائل النباتية خلال فترة البحث.