

REVISION OF THE FAMILY CHLOROPIDAE (DIPTERA) IN IRAQ

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ABSTRACT

The aim of this study is to survey and make to revision the genera and species of Chloropidae fauna of Iraq. The investigation showed four species belonging four genera, which belongs to two subfamilies, and one unidentified species belonging to the genus *Elachiptera* Maquart, The specimens were compared with stored insects at Department of Entomology and invertebrates, Iraq Natural History Research Center and Museum.

Key words: Brachycera, Chloropidae, Diptera, Eye fly, Grass fly, Iraq.

INTRODUCTION

The family Chloropidae Schoenher, 1840 (frit flies, grass flies or eye flies) belongs to super family Carnoidea. It has four subfamilies: Chloropinae, Oscinellinae, Rhodesiellinae, and Siphonellpsinae (Brues *et al.*, 1954).

The members of Chloropidae are worldwide distribution or cosmopolitan and are found in all Zoogeographical regions except Antarctica; they are about 3000 described species under 200 genera (Sabrosky, 1989; Canzoneri, *et al.*, 1995; Nartshuk, 2012; Bazyar *et al.*, 2015).

The grass flies are also found in marshes, vegetation areas, forests; the members of the family are phytophagous. Some species as a gall maker of stems likes *Lipara lucens* Meigen, 1830 on *Phragmites australis* (Poaceae) are affected on the morphological tissue (Van de Vyvere and De Bruyn, 1988); and many larvae feed and developed flower heads, shoots and seeds of Poaceae and some feed on the stems of cereals, thus affected of economic production (Alford, 1999; Karpa, 2001; Petrova *et al.*, 2013). On the other hand some species as saprophytic which feed on damaged plant tissue by other insects such as *Atherigona* spp. (Diptera, Muscidae), larvae of lepidopterus stem borer and other arthropods (Von Tschirnhaus, 2002); and as predators of several insects like: aphids, eggs of grasshoppers and nuisance spiders, oothecae of mantids and eggs of Hemiptera (Dawah and Abdullh, 2006).

Some species have medical and veterinary importance (Nikapy *et al.*, 2013) such as eye gnats attracted to human and other mammals where they hover about the face, body orifices and open wounds, such as *Liohippelates* spp. and so that take part of a mechanical transition of several organisms which cause diseases to humans and livestock animals in North and South America (Bram *et al.*, 2002; Hall and Gerhardt, 2009).

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The oriental eye fly *Siphunculina funicola* Meijere, 1905 is a nuisance to humans and domestic animals which feed on various secretions including eye secretions, mucus membrane, and other moist surfaces of their hosts and carry and transmit fatal pathogens like fungi, viruses and bacteria to humans and other hosts. The eye flies are found aggregating on many hanging substrates like strings, electrical lines and wires, ropes, nest trailing, decorators, cobwebs, clothes hangers, cotton threads which as their medical and forensic importance (Sathe *et al.*, 2014); also there are some chloropid flies as parasites of amphibians (frogs) *Crinia signifera* by *Batrachomyia* sp. (Lemckert, 2000).

The adult of Chloropidae diagnosis by many features such as: small 1-5 mm rarely eight millimeters in length, variable in colors (black, blackish–grayish and bright yellow and black with vittae; head is somewhat angular; ocellar triangular large and conspicuous, shining, postvertical bristles converging, parallel or absent; vibrissae reduced or absent; antennae project and prominent with arista located at basal, dorsal and scarcely terminal, bare, plumose or pubescent. Subcostal vein incomplete, costa broken at near the end of first radial vein (R1); second discal cell and basal cell are united, vein Cu1a slightly sinuate and anal cell wanting. The previous are characters accepted by the authors: Essig (1947), Comstock (1948), Mc Alpine(1958), Curran (1965), Cole (1969), Borror and White (1970), Oldroyd (1970), Unwin (1981), Scudder and Cannings (2006).

MATERIALS AND METHODS

Many specimens of grass flies were collected by sweeping net in various habitats from several regions of Iraq during 2017. Then the flies were killed by freezing for 24 hours; the specimens mounted with insect pins and kept in insect collection boxes till diagnosed.

To identify the genera, by using several taxonomic keys such as: Curran (1965), Cherian (2002), An and Yang (2005), Nartshuk and Fedoseeva (2011), Deeming and Al-Dhafer (2012), Khaghaninia and Khameneh (2015) and Khameneh *et al.* (2016).

The specimens were compared with previously identified specimens which had been diagnosed and stored at Department of Entomology and Invertebrates, Iraq Natural History Research Center and Museum, University of Baghdad.

RESULTS AND DISCUSSION

In this study the survey showed four species, four genera and one unidentified species that belong to the genus *Elachiptera* Macquart belonging to two subfamilies Chloropinae and Oscinellinae. The key to identify of subfamilies and genera was constructed, the global distribution of each species was shown in this investigation.

Key to subfamilies and genera of Chloropidae in this study :

- 1- Costa ending between the apices of R4+5 and M1+2; vertical bristles weak or absent.
..... **Subfamily: Chloropinae** 2
- Costa extending to apex of M1+2; vertical bristles well developed, the inner weaker than the outer..... **Subfamily : Oscinellinae**3
- 2- Hind femora greatly thickened and tibiae strongly arcuate
..... **Meromyza Meigen**
- Hind femora not thickened and hind tibiae almost or quite straight..... **Thaumatomy Zenker**

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- 3- Body shining black; mesonotum with normal shape and depression at the end; all femora black..... *Oscinella* **Becker**
- Body dull black ,yellowish –brownish; mesonotum with dark vittae or spots, femora yellow – brownish *Elachiptera* **Macquart**

Family, Chloropidae Schoenher,1840

Synonyms: Chloropidae, Rondani,1856

Oscinidae Fallen, 1820

Mindidae, Paramonov, 1957

Echiniidae, Paramonov, 1961

Siphonellopsidae, Nartshuk, 1987

1. **Subfamily: Chloropinae** Rondani,1856

Genus: Meromyza Meigen, 1830

Type species: *Musca saltarix* Linnaeus,1761

Diagnostic characters: Body is elongated, yellowish and greenish in color; head is square shaped with tiny setae; ocellar triangle with black spots; the length of flagellum little longer of broad, mesonotum has black, brownish longitudinal or yellow vittae; veins R2+3 and R4+5 much bent forward.

Meromyza nigriventris Maqurt,1835

Materials Examined: (5♀♀, 4♂♂) : Baghdad, Bab Al –Mudham, 1♀,1♂ from weeds at 3.xi.2017; Basra, Abu- Al Khaseeb, 3♀♀,♂ from alfalfa field at 21.III.2017; Karbala- Al-Hussaynia, 1♀,2♂♂ from grass at 4.V.2017.

Description: The body is elongated, black –brownish color , mesonotum black with two parallel yellow vittae.

Global Distribution: Iraq (El- Haidary *et al.*, 1974); Japan (Kanmiya, 1978); Palearctic region (Nartshuk, 1984); Arabian Peninsula (Deeming and Al-Dhafer, 2012); China (An and Yang, 2005); Romani (Pirvu, 2005); Mediterranean islands (Nartshuk, 2013); Finland (Nartshuk and Kahanpää,2014); Iran (Rabeih *et al.*, 2012; Khameneh and Khaghaninia, 2016); Uzbekistan (Khamraev and Davenport, 2004); Poland (Bereś, 2015) and Turkey (Kubík and Barták, 2017).

Genus : Thaumatomyia Zenker, 1833

Synonyms: *Chloropisca* Loew ,1866

Pseudochlorops Malloch, 1914

Type species: *Thaumatomyia prodigiosa* Zenker,1833

= *Chlorops notata* Meigen, 1830

Diagnostic characters: body elongated and flattened in both sexes, scutellum flattened on disc, with distinct marginal rim , apical scutellar bristles closely approximated.

Thaumatomyia sulcifrons Becker , 1907

Materials Examined: (4♀♀, 3♂♂): Baghdad, Al Taji, 2♀♀ at 5.X.2017; Al-Najaf,2 ♂♂ at 10XI.2017; Wasit, Al Aziziyah, 2♀♀, ♂ at 5.V.2016.

Description: small flies 4-5mm. yellowish brown in color; head semispherical, arista long, oceller triangle large with small dull spot; mesonotum with three rims, the middle one reaching the interior margin of thorax; scutellum brighting yellow.

Global Distribution: In Iraq (Khalaf, 1963); Arabian Peninsula (Deeming and Al-Dhafer, 2012); Mediterranean islands (Nartshuk, 2013) and Iran (Bazyar *et al.*, 2015).

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***Thaumatomyia* sp.**

Global Distribution: Iraq (El-Haidary *et al.*,1974).

2-Subfamily: Oscinellinae Becker, 1910

Genus: *Oscinella* Beker,1909

Type species: *Oscinella frit*, Linnaeus,1758

Diagnostic characters: First basal cell scarcely wider at middle than end.

Oscinella frit (Linnaeus,1758)

Synonyms: *Musca frit* L. 1758

Oscinella exigua Collin,1964

Oscinella granaria (Curits,1846)

Chlorops aenea, Roser, 1840

Hydrellia rufitarsis, Meigen,1838

Materials Examined: (6♀♀, 2♂♂): Baghdad, Jaddria 3♀♀ at 25.III.2017; Al- Ttaji. 2♂♂,10.IV.2017; Karbala, 3♀♀at 20.V.2017.

Description: small black fly , legs dull black, tibiae never entirely yellow.

Global Distribution: In Iraq (Hussain,1963); Europe, Latvia (Karpa, 200; Petrova *et al.*,2013); Arabian Peninsula (Deeming and Al-Dhafer, 2012); Spain (Nartshuk *et al.*, 2013); Turkey, Iran, Europe, U.S.S.R. (Gentry, 1965); Mediterranean islands (Nartshuk, 2013); Iran (Bazyar *et al.*, 2015).

Genus: *Sabroskyina* Beschovski, 1987

Type species: *Lioscinella mimica* Collin, 1949.

Diagnostic characters: First basal cell of wing is very much broadened at mid –length.

Sabroskyina aharonii (Duda,1933)

Synonyms: *Oscinella aharonii* Duda, 1933 (Sabrosky 1963)

Global Distribution: Iraq (Deeming and Al-Dhafer, 2012); Arabian Peninsula (Deeming and Al-Dhafer, 2012); Turkey (Kubík and Barták, 2017) .

Genus: *Elachiptera* Maquart,1835

Synonyms: *Ceratobarys* Coquillett,1898

Type species: *Chlorops brevipennis* Meigen

Diagnostic characters: Third antennal segment haired; Scutellum with dorsal surface flat, or trapezoid, the marginal setae arising from more or less distinct tubercles.

***Elachiptera* sp.**

Global Distribution: Iraq (Khalaf and Al-Omar,1974).

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مراجعة لعائلة ثنائية الاجنحة (Chloropidae) في العراق

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الخلاصة

هدفت الدراسة لعمل مراجعة أجناس وأنواع عائلة ذباب الحشائش في العراق واوضحت الدراسة وجود اربعة انواع تعود لأربعة اجناس ونوع اخر غير معروف يعود الى الجنس *Elachiptera Maquarta*، والتي تضمنت عوبلتين من هذه العائلة.

قورنت العينات مع النماذج الحشرية المحفوظة في قسم الحشرات و اللاقريات/ مركز بحوث و متحف التاريخ الطبيعي العراقي/ جامعة بغداد لغرض تأكيد تشخيصها.