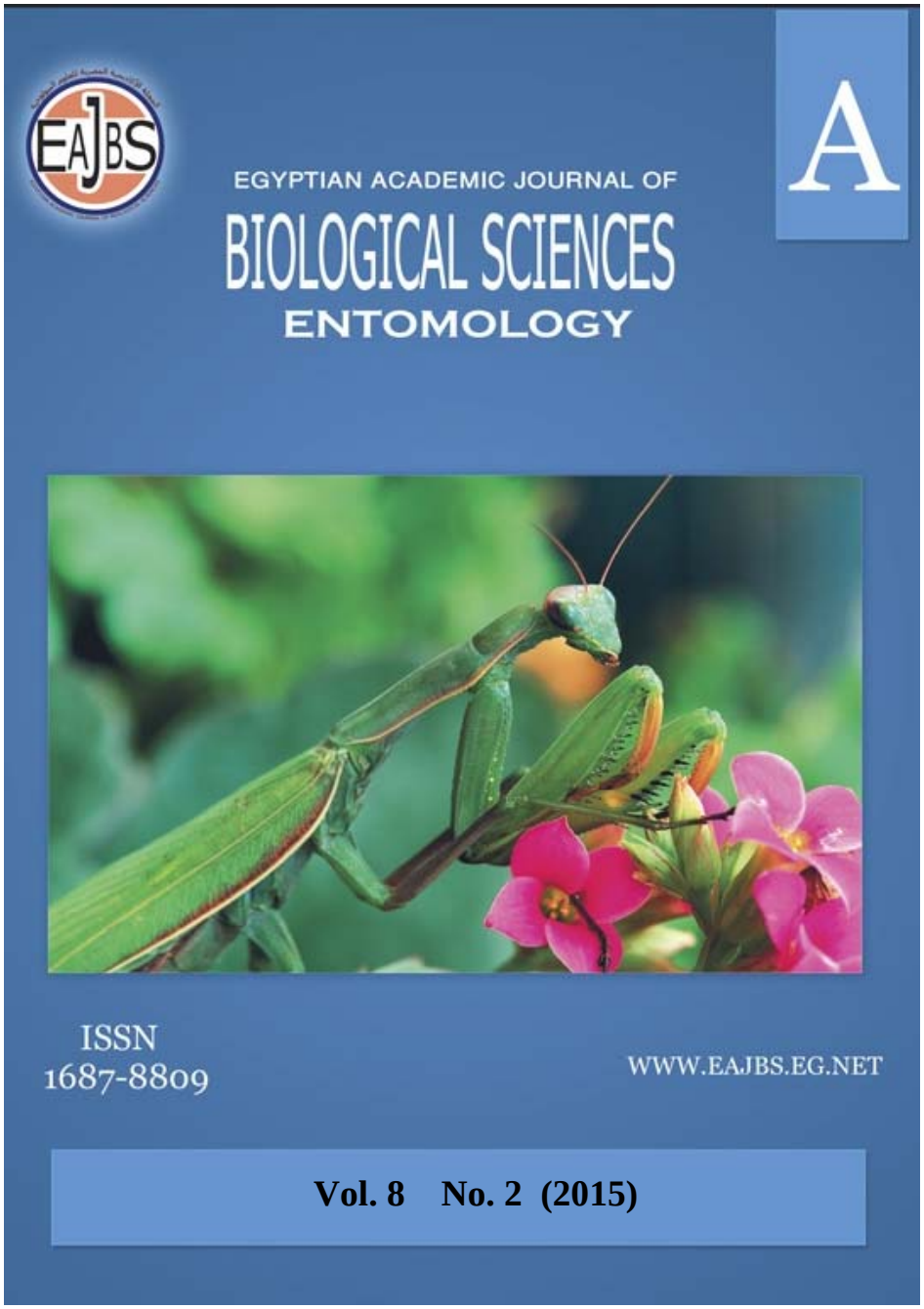

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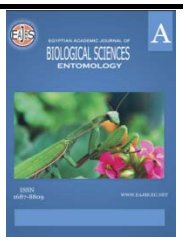

Checklist of the family Anthomyiidae (Diptera) from Saudi Arabia

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ABSTRACT

A total fourteen species belonging to five genera (*Anthomyia*, *Chirosiomima*, *Delia*, *Leucophora and Pegomyia*) of two subfamilies (Anthomyiinae and Pegomyinae) representing the family Anthomyiidae in Saudi Arabia are presented together with some remarks and taxonomical notes. Taxonomic position, synonyms, common names, distribution and host plant records of each species are provided. New records in Saudi Arabia are indicated.

INTRODUCTION

Family Antomyiidae (The root maggot flies) is a large and diverse family of flies closely related to the Muscidae, comprises about 1941 species within 53 genera in the world (Pape *et al*., 2011). In the Palearctic region about 900 species spread over 39 genera **(**Suwa, & Darvas, 1998). Most of them look like small houseflies, but are commonly drab grey. The main taxonomic character seems to be that the anal vein extends right to the wing margin. Some species are truly phytophagous, feeding on living plant tissues and are significant agriculture pests (Hill, 1987). Other species are predators (Clausen, 1962), fungivorous (Smith, 1989) or saprophagous (Huckett, 1971). Adult flies are mainly predaceous and also anthophagous or saprophagous. Most species occur in vegetation, others are found around dung and decaying matter, still others are semiaquatic or aquatic. The family also includes inquilines, commensals and parasitic larvae.

Members of the family Anthomyiidae are a large and taxonomically difficult group of flies because of unstable taxonomy and nomenclature (Michelsem, 2014). The family was poorly studied from the Arabian regions except Deeming and Van Harten, 2014, who recorded four genera with ten species from Arabian Peninsula. However, Buttiker *et al.* (1979), Dabbour (1979 a, b and 1981), Martin (1972) Abu Thuraya (1982) Abu-Zoherah *et al.* (1993) and Al-Ahmadi and Salem (1999 a, b) reported, listed and noted on the dipterous flies of Saudi Arabia, including anthomiid flies.

The present study threw light on the members of this family in Saudi Arabia with additional new records from Saudi Arabia and assist for more studies on this important family in Saudi Arabia.

MATERIALS AND METHODS

The present study is based on all records of the species of the family Anthomyiidae from Saudi Arabia and on material borrowed from the King Saud University Museum of Arthropods (KSMA), Department of Plant Protection, College of Food and Agriculture Sciences, King Saud University, Riyadh, and determined by John C. Deeming, National Museum of Wales, Cardiff, UK.

Recent taxonomic position, senior synonyms, common names, host records and distribution for each species are presented. All taxa (subfamilies, tribes, genera and species) are arranged herein in alphabetical order.

RESULTS AND DISCUSSION

Anthomyiidae

Diagnosis: Body small or moderate in size. Color varying from yellowish brown to dark grey or black, Hypopleural bristles on sides of thorax apical. Fourth vein straight towards the border of the wing, anal vein of wing reaching the margin of the wings Median vein straight, not curved towards anterior alar margin. Three pairs of postsutural dorsocentral bristles almost always present. Tarsi as long as tibia, first segment of posteror tarsi on lower side near base with minute bristes. Tibial spur well developed. Sternopleuron lower side often with short soft hairs. Eyes in male in most cases close-set or contiguous. Abdominal segments five in females and six in males. Females of many species not known to date.

Subfamily Anthomyiinae

Tribe Anthomyiini

Genus *Anthomyia* Meigen, 1803

Generic characters: Members of the genus *Anthomyia* (flower flies) look rather like small houseflies, but commonly have conspicuous black-and-white patterning. Some species have dark markings over the cross veins. Flies has hairs on the propleuron. The surstyli are simple and without stronger inner setae, the cercal plate is without specialized flattened apical setulae, the distiphallus is without a dorsal projection (sometimes apparently secondarily absent in typical *Anthomyia*). Sternite VI is without a median process, and sternite V is without a ventrally directed membranous lobe. The adults visit flowers like most other anthomyiids (presumably in order to feed on necatar). Larval diets include vertebrate feces, decomposing fungi, and tent caterpillar debris. Larvae of some species live in bird nests.

1-*Anthomyia amoena* (Macquart, 1851)

Hylemyia fasciata Walker, 1858.
Spilogaster amoenus Macquart, 1851.
Spilogaster fasciata Stein, 1901.
Anthomyia fasciata Stein, 1913.
Hylemyia tricolor Bigot, 1885.
Anthomyia tricolor Bezzi, 1908.

Diagnostic characters: Head with parafrontalia very narrow posteriorly, widening anteriorly to about width of first flagellomere. Eyes widely separated. Frontal stripe very narrow. Interfrontal setulae apparently absent. First flagellomere narrow. Interfrontalia, parafrontalia and genae varying from dark brown to blackish, occiput blackish, Antennae entirely dark brown to blackish. Arista paler basally, short tapering from base to apex, plumose and has long setae. Thorax densely dusted with

contrasting black and silvery grey pattern on dorsal surface; transverse postsutural band across the scutum complete between wing bases. Scutellum black on basal two-thirds, with silvery grey tip extending along lateral margins. Abdomen long ovate widest at 3rd tergite;
largely densely dusted over dark to orange ground-colour, basal tergites often orange-yellow with contrasting black and grey pattern on tergites. lateral margins with long setae.
Distribution: Widespread in Africa from the Cape Verde Islands in the west to the whole of Africa south of the Sudan and Nigeria, and the Indian Ocean islands.
Host plant: not known.
Material examined: Abha, Habalh, (1♂) 25 IV 2011, sweeping, N: 18.02.05 E. 42.51.49, Alt. 2397, M. Sharaf.; H. Setyaningrum and A. Alansi (KSMA).
Remarks: *Anthomyia amoena* is an African species. Very little information on this species are available and it needs more investigations.

2-*Anthomyia benguellae* Malloch, 1924

Anthomyia sensu Curran, 1927
Anthomyia indica Malloch, 1924
Anthomyia inda Ackland & Pont, 1977
Diagnostic characters: Interfrontalia, parafrontalia and genae varying from dark brown to blackish. Parafrontalia very narrow posteriorly Face and occiput blackish. Antennae entirely dark brown to blackish. First flagellomere slightly more than twice as long as wide. Arista tapering, brownish at its base. Thorax black with silvery grey pattern on dorsal surface, presutural spots separated behind head, scutellum largely black, with only its tip silvery grey. Wing membrane slightly brownish orange; wing bases with orange-brown veins; squamae paler than wing base with whitish fringes; halteres yellow. Legs entirely dark brown to blackish. Abdomen long ovate, largely densely dusted over dark ground-colour, with contrasting black and grey pattern on tergites. 3rd and 4th sternites long and narrow, with a rounded posterior margin, densely clothed with long setae posteriorly.
Distribution: Namibia, South Africa, Zimbabwe, Uganda, Kenya, Central African Republic, Malawi, Angola , India, UAE, Yemen, Oman, Saudi Arabia.
Host plant: not known
Material examined: Riyadh**,** Hutet BaniTamim, malaise trap, (1♀) 30 XII 2010, N 23.25.53 E 46.44.04, Y. Al Dryhim, H. Al Dhafer, H. Fadhl and A.Gharbawi (KSMA); Abha, Habalh, (1♂, 1♀) 25 IV 2011, sweeping, N: 18.02.05 E. 42.51.49, Alt. 2397, M. Sharaf. H. Setyaningrum and A. Alansi (KSMA).
Remarks: El Hawagri *et al.* (2013) surveyed the species from Al-Baha Province, Saudi Arabia (Ghabet Amadan, during May) and (Wadi Turabet Zahran, **during** October).

3-*Anthomyia tempestatum* Wiedemann, 1818

Anthomyia tempestatum Wiedemann, 1830
Anthomyia pluvialis tempestatum Wiedemann, 1848
Diagnostic characters: Parafrontalia touching in upper frons half, widening anteriorly to slightly less than width of first flagellomere; eyes separated by diameter of anterior ocellus. Presutural spots separated behind head, each spot about as long as wide. Arista widened in basal quarter to two-thirds, then abruptly narrowing, about 1.5 times length of first flagellomere with short pubescent. Transverse postsutural band across the scutum always complete between wing bases, but anterior and posterior margins strongly indented along dorso-ventral rows.Wing membrane fairly clear; wing bases with pale brownish veins; squamae paler. Thorax: with 2–3 pairs of

rather fine presutural acrostichals in rows slightly closer together than to dorso-central rows, without additional setulae in between. Abdomenal 4th sternite twice as long as wide, parallel-sided with about 4 long lateral setae on each side, and a few shorter setae posteriorly. 5th sternite processes with some longer lateral setae basally.
Distribution: Spain, Morocco, Tunisia, Namibia, South Africa to Kenya, Yemen, Saudi Arabia, Oman and Canary Island.
Host plant: not known
Remarks: Very little information on this species are available and it needs more investigations.

4-*Anthomyia verecunda* Ackland, 2001

Hylemyia sinensis (Jaennicke, 1924)
Hylemyia pullula pullula (Zetterstedt, 1941)
Hylemyia pullula (Zetterstedt, 1951)
Diagnostic characters: whole body dusting more greyich olive. Parafrontalis with the greyich shifting spot in vibrissal angle often not extending completely to eye margin. Thorax dusted darker grey. Abdomen largely grey dusted over dark ground colour with a narrow brown central vitta which is broken into separate triangular spots. Arista long plumose. Lateral vittae on scutum often hardly visible. Wing membrane near base of wing not clouding. Costa with marginal short spinules, about as long as costal diameter; one of the spinules before distal, twice the length of the other costal spinules. Abdomenal 5th sternite processes without long apical setae. Legs, especially mid and hind tibiae and knees extensively orange medially
Distribution: South Africa, Kenya and Saudi Arabia.
Host plant: not known.
Material examined: Abha, Souda, (1♂, 10 ♀) 24 IV 2011, sweeping, N: 18.12.27 E. 42.21.52, Alt. 2928, M. Sharaf. H. Setyaningrum and A. Alansi (KSMA).
Remarks: Very little information on this species are available and it needs more investigations.

5-*Anthomyia xanthopus* (Hennig, 1974)

Craspidochaeta xanthopus Hennig, 1974)
Diagnostic characters: Interfrontal border scarcely narrower than width of an ocellus, with a pair of hairs or bristles. Brown stripes on mesonotum faded or absent, bristles on mesonotum week. Prealar bristles shorter than notoplural and lateral posthumeral bristles reduced. Proepisternum without hairs. Arista pubscent, longest hairs much shorter than width of flagomere. Wing not fuscous around cross veins. Costal vein extensively setulose. Mid and hind femora yellow. Foretibia with apical bristle.
Distribution: Canary Islands, Israel, and Saudi Arabia.
Host plant: not known.
Material examined: Riyadh, HutetBaniTamim, malaise trap, (1♂) 30 XII 2010, N 23.25.53 E 46.44.04, Y. Al Dryhim, H. Al Dhafer, H. Fadhl and A. Gharbawi (KSMA); Taif, Alshifa road, Wadi three Ghazal, (1♀) 31 V 2011, Light trap, N 21.05.38 E 40.21.04, H. Al Dhafer and A. Elgharbawi (KSMA); Riyadh, Hutet Bani Tamim, Ibex reserve National Park, Wadi Motem, 180 km. S. Riyadh, sticky trap, (1♂) 15 XII 2007, (2♀) 11 I 2008, (1♂, 4♀) 25 I 2008,Y. Al Dryhim, H. Al Dhafer, H. Fadhl and A.Gharbawi (KSMA).
Remarks: Very little information on this species are available and it needs more investigations.

Genus *Chirosiomima* Hennig, 1966
Generic characters: Frontal vitta ochre yellow to reddish brown on lower half.

Abdomen with strong dark subshine through thin layer of grey dusting that even covers tergites VI and VII. Frons strikingly narrow, on lower part barely more than one-third of greatest width of head. Also parafrontalia narrow, only about one-third as wide as frontal vitta. Frons with 3 pairs of orbital, 2 pairs of frontal and 1 pair of interfrontal setae, all quite strong. Legs robust, mid femur only with a few short setae basally and subdistally, but also with some short setae basally. Tergites II–V with weak marginals. Tergites VI and VII tend to be partly exposed behind tergite V; tergite VI with both setae and setulae.

6-*Chirosiomima gestroi* (Seguy, 1930)

Hylemyia obscurinervis Emden, 1941
Hylemya gestroi Seguy, 1930
Pegomyia obscurinervis Emden, 1941

Diagnostic characters: Frons strikingly narrow, barely more than one- third of greatest width of head with 3 pairs of orbital, 2 pairs of frontal and 1 pair of interfrontal setae, all quite strong on lower part. Parafrontalia narrow, only about one-third as wide as frontal vitta. Frontal vitta ochre yellow to reddish brown on lower half. Legs more robust. Mid femur only with a few short setae basally and subdistally, but also with some short setae basally. Abdomen with strong dark subshine through thin layer of grey dusting that even covers tergites VI and VII of the oviscapt.. Tergites II–V with weak marginals and no discals. Cerci and epiproct short.

Distribution: Ghana, South Yemen, Tunisia, Saudi Arabia, Iran, Libya.

Host plant: not known.

Remarks: Very little information on this species are available and it needs more investigations.

Tribe Hydrophoriini

Genus *Delia* Robineau-Desvoidy, 1830

Generic characters: brownish or grayish, male darker than female. Head with strong and long setae, arista black, more than twice the length of the antenna, pubescent at its base. Face and parafrontalia straight, mouth parts black, parafrontalia and facial grayish. Thorax with conspicuous three dark brown vittae dorsally, less conspicuous in female. Scutellum with fine erect hairs ventrally. Wings with yellowish or grayish reflections at its base. Legs black with long claws and pulvilli. Mid tibia with one or two postero-dorsal bristles. Abdomen elongate with parallel sides, its tip broad in male, pointed in female, bended ventrally, with mid dorsal patches, inter segmented bands and long bristles. Ovipositor long, slender, as long as abdomen. Sixth and seventh sternites are long. Cerci with long bristles.

The adult flies are predators of small insects, while larvae are serious pests to many plants. Although most members of this genus have larvae that feed on stems, flowers and fruits of plants, a few others have larvae that are leaf miners. The larvae of the Afrotropical *Delia* species are mainly phytophagous, and have been found in various cereal crops and grasses, including *Cynodon, Secale, Hordeum, Setaria, Pennisetum, Chloris, Sorghum,* and *Eleusine* species.

Remarks: The genus *Delia* contains approximately 300–340 species worldwide (excluding Neotropical species). At present about 170 species are recorded from the Palaearctic Region, and 162 species from the Nearctic Region, 44 of which are Holarctic. Afrotropical fauna includes 20 *Delia* species.

7-*Delia antiqua* (Meigen, 1826)

Anthomyia antiqua Meigen, 1826
Hylemia antiqua Meigen, 1826
Anthomyia ceparum Meigen, 1830

Musca liturariae Ratzeburg, 1844
Anthomyia caepicota Robineau – Desvoidy, 1851
Chortophilla cinerea Meade, 1882
Phorbia cepetorum Meade, 1882
Anthomyia angustifrons Stroble, 1893
Hylemyia antiqua (Meigen); Huckett: 1924
Chortophila antique (Meigen); Kuwayama: 1938
Common name: The onion fly
Diagnostic characters: Dark grey species, prealar bristle shorter than posterior notoplural bristle. Fore tibia with a strong curved posteroventral apical bristle; mid-tibia with two posterodorsal bristles as long as fifth tarsal segment; hind tibia with a partial series of setulose hairs. Sixth sternum elongate and slender; eighth sternum triangular in shape. Sixth and seventh tergum slender and straight.
Distribution: Palearctic region, North America, Canada, Europe and parts of Asia.
Host plants : Onion (*Allium cepa*), Leek (*Allium porrum*) , Garlic (*Allium sativum*) (Alliaceae)
Remarks: This species is considered the most serious pest attacking onions. Larvae burrow in developing bulbs, causing wilting of foliage, collapse leads to losses of bulbs. The larvae damage bulb onions, garlic, chives, shallots, leeks and the bulbs of flowering plants. In addition, it may cause fungal and bacterial rots (Miles, 1954 and Karaman *et al*., 1972).

The onion fly is found in North America, Western Europe, Russia, Central Asia, China, Japan and Korea but is absent from deserts. In the far north of its range it has one generation per year, but further south there may be two, three or four generations in one year.

8-*Delia arambourgi* (Seguy, 1938)

Hylemya arambourgi (Seguy, 1938)
Phorbia arambourgi (Seguy, 1938)
Common name: The barley shoot fly; barley fly
Diagnostic characters: The adult is a medium sized fly about 7 – 8 mm long, and looking rather like a small housefly; the female has a pointed abdomen and is grey; the male is blackish and has a rounded abdomen apex.
Distribution: Africa (Nigeria, Zimbabwe, Kenya, Uganda, Sudan, Ethiopia, South Africa and the South Arabian peninsula.
Host plants: Barley (*Hordeum vulgare*) (Geraminae), Wheat (*Triticum aestivum*), Wheat (*Triticum durum*) and Wheat (*Triticum vulgare*) (Geraminae)
Alternative hosts: Maize, bulrush millet and some grasses.
Remarks: The larva eats the stem of the central shoot, causing a typical shoot borer 'dead heart'. The central shoot dies, and turns brown, and may be easily pulled out of the plant. One larva may destroy three or four shoots. It is an important pest of barley in Africa.

9-*Delia bracata* (Rondani, 1866)

Pegomyia albigena Villeneuve, 1911
Chortophila linearis Adams, 1905
Hylemyia flavitibia Karl, 1939
Diagnostic characters: Body black, uniformally covered with yellowish grey pubscent. Frontal vitta velvety black bears a pair of bristles. prealar absent. Antennae black, first two joints of a reddish cast. Arista short, plumose. Mesonotum with four rows of bristles. Wings hyaline with a faint fuscous tinge. Costa bare , with a strong spine at tip of auxillary vein. Halters yellow. Legs black, knees in male and tibia in

female with a yellowish cast. Foretibia with one bristle, mid tibia with 1 -2 short bristles. Abdomen with marginal microchaetae. Abdominal segments 2 – 4 with a linear spot.

Distribution: widely distributed in the Mediterranean subregions.

Host plant: not known

Remarks: Very little is known about this species, but it is known as a common pest in cultivated areas, and suspected to be a pest of cereal crops.

10- *Delia brassicae* (Bouche, 1933)

Hylemia brassicae Bouche, 1833

Anthomyia brassicae Bouche, 1833

Anthomyia raphani Harris, 1841

Common name: Cabbage maggot

Diagnostic characters: Brownish species, 4-5 mm. Thorax with middle stripe half the length of the scutum. Abdomen as long as thorax. Hind femur with a series of fine bristles at antero-ventral surface, hind tibia with preapical, mid-dorsal ones. Sixth sternum broad, seventh sternum with middle constriction. Cerci long, broad and bristly. Female ovipositor curved.

Host plants: Cabbage (*Brassica chinesis*) (Cruciferae), Rape (cabbage) (*Brassica napus*), Brussels sprouts (cabbage) (*Brassica oleracea capitata*), Turnip (*Brassica rapae rapae*) and Cauliflower (*Brassica oleracae*).

Distribution: Europe, Canada, Egypt.

Remarks: The species is a common economic pest of cultivated cruciferous crops. The larvae causes extensive root damage, destroy the branched roots and make furrows in the sides of the tap roots, sometimes complete girdling can be made. It is a major pest of cabbage, radish, turnips and other plants.

11- *Delia flavibasis* (Stein in Becker, 1903)

Hylemyia bouchelieri Seguy, 1934

Hylemyia hordeacea Seguy, 1936

Hylemyia sedaga Seguy, 1950

Common name: The barley shoot fly

Diagnostic characters: Brownish species, more than 5 mm in length, middle thorathic stripe extends till the end of scutum, prealar bristle much longer than posterior notopleural bristle. Mid tibia with one antero and one postero-dorsal bristle; hind femur with complete row of antero and postero-ventral bristles; hind tibia with four to six long antero-dorsal setae which are longer than the femoral diameter.Tergites are thick and elongate.

Distribution: Originally described from Egypt, it is widely distributed in the southern Palearctic region, Ethiopea , Kenea , North America and India.

Host plants: Onion, maize, wheat, blurich millet,vegetables and many winter crops.

Remarks: It is a widely phytophagous insect that attacks most winter crops (Ackland, 1967 and Pont and Ackland, 1980).

12- *Delia platura*(Meigen, 1826)

Anthomyia cana Macquart, 1835

Anthomyia platura Meigen, 1826

Aricia fusciceps Zetterstedt, 1845

Chortophila cilicrura Rondani, 1866

Hylemyia cillicrura Rondani ; Harukawa & Konado : 1930

Hylemyia fusciceps Ringdahl, 1933)

Hylemyia platura (Meigen, 1826)

Common name: Seed maggot, the bean seed fly, corn seed maggot.

Diagnostic characters: Dark grey species, prealar bristle as long as posterior notoplura one. Fore tibia with coarse posteroventral bristles; mid-tibia small posterodorsal bristles shorter than fifth tarsal segment; hind tibia with extensive series of posteroventral setulose hairs. Fifth sternum with rounded and small basal plate, rounded slender two processes with few hairs. Sixth and seventh sternum with median constrictions.

Distribution: Almost completely cosmopolitan, occurring from Arctic circle down to South Africa, New Zealand, Tasmania and Argentina, but not recorded from the north-eastern part of South America, West Africa, India or the Malaysia/Indonesia peninsula area. Europe, America, North Africa and Australia.

Host plants: Sown seeds of beans and maize. Wheat, Beans, Potatoes and Onions.

Alternative hosts: Tobacco, marrow, cucumber, lettuce, peas and crucifers.

Material examined: Taif,(1♂, 2 ♀), 5 12 1976 (KSMA); Huraymila, Buaithiran, 1 V 2011, light trap, N 25.07.40 E 46. 05.17, Alt. 785 m. Coll. Y.AlDryhim and H. Al Dhafer (KSMA); RawdhatKhorim 100km. E. Riyadh, N 25.22.58 E 47.16.44, 19 IV 2011, sweeping net Coll. Y. Aldryhim, H. Al Dhafer, H. Fadl and A. Elgharbawy (KSMA).

Remarks: This is an agriculture pest especially in greenhouses. It attacks wheat, beans, peas, cucurbits and most cereal crops, damages the germinating seeds and seedlings (Throne and Eckenrode, 1985 and Smith, 1989). It is a serious pest of beans in many areas, and of maize in Europe and USA (Hill, 1987). The maggots bore the cotyledons of sown seeds or into stems and petioles of young seedlings. Also, larvae are vectors of bacterial diseases, and frequently enter the egg pods of grasshoppers and destroy them (Vea *et al*., 1975).

Genus *Leucophora* Robineau-Desvoidy, 1830

13- *Leucophora amicula* (Seguy, 1928)

Hylephila amicula (Seguy, 1928)

Delia albula (Fallen): Baez, 1979.

Diagnostic characters: Body whitish grey dusted. Interfrontalis bare, small. Parafrontalia very broad, narrowly separated above lunula. Paraficial broader than flagellomere. Prealar present. Costa bare.on ventral face. Legs black, mid tibia without bristles.

Distribution: Canary Island, Tunisia, Israel, China

Host plant: not known

Remarks: Very little is known about this species. Larvae live as cleptoparasites in the nests of ground-living bees.

Subfamily Pegomyinae

Tribe Pegomyini

Genus *Pegomyia* Robineau-Desvoidy, 1830

Generic characters: Head with interfrontalia, genae and face varying from yellow to dark brownish. First and second antennal segments orange yellow, third blackish. Thorax grey dusted; legs partially yellow or pale, hind femur with five anterodorsal bristles. Prealar bristle as long as posterior notoplural one. Female bristles shorter than that of male. Abdomen in male elongate, with parallel sides, in female rounded and large. Fifth sternum with crowded tuft of setae at the base of its two lobes.

Remarks: Adults are predators (Hobby *et al*., 1934), larvae leaf mining, feed on mesophyll tissue and parenchyma between upper and lower leaf surfaces.

14- *Pegomyia betae* Curtis, 1847

Anthomyia betae Curtis, 1847

Anthomyia femoralis Brischke, 1881

Anthomyia dissimilipes Zetterstedt, 1849
Pegomyia vicina Lintner, 1883
Common name: Beet leafminer
Diagnostic characters: Legs pale grey, hind tibia with two antero-ventral, three antero-dorsal and four postero-dorsal bristles. Abdomen light grey. Fifth sternum weakly chitinized, with large basal plate, pointed process, and few bristles at the base of its process. Female ovipositor three times as long as wide, with small marginal eighth tergite, oval bare body and curved eighth plates. Cerci short and oval.
Distribution: Europe, North America and Egypt.
Host plants: Beets, spinach and other Chenopodiace plants (Swiss chard or chard, *Beta vulgaris cicla***;** Lamb's quarters ,*Chenopodium album***;** *Chenopodium murale* and Spinach, *Spinacia oleracea*).
Remarks: Some species are considered pests due to their leafmining larvae.

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