

DIPTEROUS FLIES SPECIES AND THEIR DENSITIES IN FOURTEEN EGYPTIAN GOVERNORATES

By

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Abstract

The present study focused on dipterous flies, distribution and densities in 14 Egyptian Governorates. The abundance and distribution of flies was carried out in three phases. The first was in 1999 in 5 governorates, Qalyobia, Menoufia, Fayium, Behiera & Assuit included species of the families: Calliphoridae, Chloropidae, Drosophilidae, Milichiidae, Muscidae, Otitidae, Piophilidae, Sarcophagidae, Sepsidae, Sphaeroceridae and Syrphidae. The second was in 2000 in another five Governorates, Kafr-El-Sheikh, Giza, Menia, Aswan and Sharkia included sp. of the families: Calliphoridae, Chloropidae, Drosophilidae, Milichiidae, Muscidae, Otitidae, Piophilidae, Sarcophagidae, Sepsidae, Sphaeroceridae and Syrphidae. The third phase was in 2001 in 4 Governorates: Kena, El-Wady El-Gedied, Da-kahlia and South Sinai included species of the families: Calliphoridae, Chloropidae, Drosophilidae, Milichiidae, Muscidae, Otitidae, Phoridae, Piophilidae, Sarcophagidae, Sepsidae, Sphaeroceridae and Syrphidae. *Musca domestica* was the most abundant sp. found throughout the work. The results are a step in drawing an update map for insect-vectors to help in the national control programs.

Introduction

Dipterous flies are among the most important insects that affect the health of human and animals. They are pathogenic

vectors either mechanically or biologically (Zumpt, 1965) or being the causative disease agents (Morsy *et al.*, 1991). No doubt, there is a correlation between flies abundance and incidence and prevalence of diseases. These data are important in the epidemics. The majority of the non-blood sucking breed in the carrion, decaying vegetable matter where they carry pathogens to human food or drink or directly to human body (Smart, 1965).

The present work aimed to identify the dipterous flies, their distribution and densities in fourteen Egyptian Governorates.

Material and Methods

Adult dipterous flies were collected from representative cities in the fourteen Egyptian Governorates during the years 1999-2001. The collections were made by using standard insect net around garbage accumulation, carrion, decaying vegetables and animals matters, fishes excreta, human excreta the flies breeding places. The flies identifications were carried out using keys given by James (1947); Zumpt (1965); Steyskal and El-Baily (1967); Smith (1973); Shaumer *et al.* (1977); Shaumer and Kamal (1983); Shaumer *et al.* (1985; 1989); Mohamed and Shoukry 1991) and Morsy *et al.* (1991).

Table (1): Adult flies collected in the first phase in 1999.

Area	Species	Flies captured		Total No.	Temp
		male	Female		
Qalyobi a- Banha	<i>Chrysomya albiceps</i> (Wied.)	1	0	1	29.9
	<i>Lucilia sericata</i> (Meig.)	0	2	2	
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Hydrotaea meteorica</i> (L.)	0	0	0	
	<i>Limnophora multipunctata</i> (S)	1	2	3	
	<i>Limnophora variegata</i> (Stein)	6	5	11	
	<i>Musca domestica</i> L.	586	1063	1649	
	<i>Musca sorbans</i> Wied.	5	5	10	
	<i>Muscina stabulance</i> (Fallén)	0	0	0	
	<i>Ophyra capensis</i> (Wied.)	0	0	0	
	<i>Stomoxys calcitrans</i> (L.)	3	2	5	
	<i>Physiphora demandata</i> (Fabr.)	3	1	4	
	<i>Piophilila casie</i> (L.)	1	1	2	
	<i>Parasarcophaga hirtipes</i> Wic.	0	0	0	
	<i>Coproica vagans</i> (Haliday)	0	1	1	

	<i>Sepsis thoracica</i> (Rob. - Des.)	0	0	0	
Behiera, Damanhor	<i>Chrysomyia albiceps</i> (Wied.)	6	13	19	
	<i>Lucilia sericata</i> (Meig.)	0	3	3	28.9
	<i>Fannia canicularis</i> (L.)	0	1	1	
	<i>Hydrotaea meteorica</i> (L.)	7	7	14	
	<i>Linnophora multipunctata</i> (S.)	0	0	0	
	<i>Linnophora variegata</i> (Stein)	0	1	1	
	<i>Musca domestica</i> L.	2115	2621	4737	
	<i>Musca sorbans</i> Wied.	0	7	7	
	<i>Muscina stabulance</i> (Fallén)	4	0	4	
	<i>Ophyra capensis</i> (Wied.)	6	8	14	
	<i>Stomoxys calcitrans</i> (L.)	0	1	1	
	<i>Physiphora demandata</i> (Fabri.)	0	5	5	
	<i>Piophilila casie</i> (L.)	1	3	4	
	<i>Parasarcophaga hirtipes</i> Wi.	0	0	0	
	<i>Coproica vagans</i> (Haliday)	26	43	69	
<i>Sepsis thoracica</i> (Rob. - Des.)	20	58	78		
Fayium Senoris	<i>Chrysomyia albiceps</i> (Wied.)	0	0	0	
	<i>Lucilia sericata</i> (Meig.)	0	0	0	32.0
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Hydrotaea meteorica</i> (L.)	0	0	0	
	<i>Linnophora multipunctata</i> (S.)	0	0	0	
	<i>Linnophora variegata</i> (Stein)	8	14	22	
	<i>Musca domestica</i> L.	1207	1998	3205	
	<i>Musca sorbans</i> Wied.	8	19	27	
	<i>Muscina stabulance</i> (Fallén)	0	0	0	
	<i>Ophyra capensis</i> (Wied.)	0	0	0	
	<i>Stomoxys calcitrans</i> (L.)	0	0	0	
	<i>Physiphora demandata</i> (Fabr.)	0	0	0	
	<i>Piophilila casie</i> (L.)	0	0	0	
	<i>Parasarcophaga hirtipes</i> Wi.	0	0	0	
	<i>Coproica vagans</i> (Haliday)	5	17	22	
<i>Sepsis thoracica</i> (Rob. - Des.)	0	0	0		
Assuit -Assuit	<i>Chrysomyia albiceps</i> (Wied.)	0	0	0	
	<i>Lucilia sericata</i> (Meig.)	0	0	0	33.6
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Hydrotaea meteorica</i> (L.)	1	3	4	
	<i>Linnophora multipunctata</i> (S.)	0	0	0	
	<i>Linnophora variegata</i> (Stein)	0	0	0	
	<i>Musca domestica</i> L.	1178	1758	2936	
	<i>Musca sorbans</i> Wied.	28	17	45	
	<i>Muscina stabulance</i> (Fallén)	0	0	0	
	<i>Ophyra capensis</i> (Wied.)	0	0	0	
<i>Stomoxys calcitrans</i> (L.)	0	2	2		

	<i>Physiphora demandata</i> (Fabr.)	23	34	57	
	<i>Piophilta casie</i> (L.)	0	1	1	
	<i>Parasarcophaga hirtipes</i> Wic.	0	1	1	
	<i>Coproica vagans</i> (Haliday)	0	2	2	
	<i>Sepsis thoracica</i> (Rob. - Des.)	3	3	6	

Table (2): Adult flies collected in the second phase in 2000.

Area	Species	Flies captured		Total No.	Temp
		male	female		
Kafr El-Shiekh	<i>Chrysomyia albiceps</i> (Wi.)	14	21	35	
	<i>Lucilia sericata</i> (Meig.)	3	17	20	31.2
	<i>Calliphora vicina</i> Robi-Di	1	0	1	
	<i>Hippelate pusio</i> Loew	2	1	3	
	<i>Drosophila histrioides</i> O.- K.	0	0	0	
	<i>Meoneura vagans</i> (Fallén)	0	0	0	
	<i>Fannia canicularis</i> (L.)	13	1	14	
	<i>Hydrotaea meteorica</i> (L.)	16	9	25	
	<i>Linnophora multipunctata</i>	0	0	0	
	<i>Linnophora variegata</i> (Stein.)	0	0	0	
	<i>Lispe nuba</i> wied	0	0	0	
	<i>Musca domestica</i> L.	2308	4137	6445	
	<i>Musca sorbans</i> Wied.	0	6	6	
	<i>Muscina stabulance</i> (Fallén)	0	1	1	
	<i>Stomoxys calcitrans</i> (L.)	0	2	2	
	<i>Synthesiomyia nudiseta</i> (Van)	0	1	1	
	<i>Physiphora demandata</i> (Fabr.)	1	0	1	
	<i>Piophilta casie</i> (L.)	0	1	1	
	<i>Parasarcophaga dux</i> Thom	0	0	0	
	<i>Parasarcophaga hirtipes</i> Wic	1	0	1	
	<i>Ravinia striata</i> (Fabricius)	0	0	0	
	<i>Sepsis thoracica</i> (R - D)	0	0	0	
	<i>Coproica digitata</i> (Duda)	0	0	0	
	<i>Coproica vagans</i> (Haliday)	0	0	0	
	<i>Copromyza costalis</i> Zetter.	0	0	0	
	<i>Eristalis megacephalus</i> (Ro)	0	0	0	
	<i>Eristalis taeniops</i> Wied.	1	0	1	
Giza, Shoubremant	<i>Chrysomyia albiceps</i> (Wied.)	15	40	55	
	<i>Lucilia sericata</i> (Meig.)	13	29	42	32.4
	<i>Calliphora vicina</i> Robin-Dis	1	0	1	
	<i>Hippelate pusio</i> Loew	2	1	3	
	<i>Drosophila histrioides</i> O-K	2	4	6	
	<i>Meoneura vagans</i> (Fallén)	0	0	0	
	<i>Fannia canicularis</i> (L.)	0	1	1	
	<i>Hydrotaea meteorica</i> (L.)	0	0	0	
	<i>Linnophora multipunctata</i>	0	2	2	

	<i>Limnophora variegata</i> (Stein.)	0	1	1	
	<i>Lispe nuba</i> Wied	0	1	1	
	<i>Musca domestica</i> L.	2436	4389	6825	
	<i>Musca sorbans</i> Wied.	6	7	13	

Giza Shoubra ment	<i>Muscina stabulance</i> (Fallén)	0	1	1	
	<i>Stomoxys calcitrans</i> (L.)	1	28	29	
	<i>Synthesiomia nudiseta</i> (V.)	0	0	0	
	<i>Physiphora demandata</i> (F.)	2	37	39	
	<i>Piophilila casie</i> (L.)	4	0	4	
	<i>Parasarcophaga dux</i> Thom.	0	0	0	
	<i>Parasarcophaga hirtipes</i> W.	0	0	0	
	<i>Ravinia striata</i> (Fabricius)	0	0	0	
	<i>Sepsis thoracica</i> (Ro.-Des)	2	10	12	
	<i>Coproica digitata</i> (Duda)	1	0	1	
	<i>Coproica vagans</i> (Haliday)	0	2	2	
	<i>Copromyza costalis</i> Zetter.	0	1	1	
	<i>Eristalis megacephalus</i> (R.)	0	1	1	
	<i>Eristalis taeniops</i> Wied.	0	0	0	
Menia, Menia	<i>Chrysomyia albiceps</i> (W.)	0	7	7	
	<i>Lucilia sericata</i> (Meig.)	1	3	4	34.5
	<i>Calliphora vicina</i> Robi-Di.s	0	0	0	
	<i>Hippelate pusio</i> Loew	0	0	0	
	<i>Drosophila histrioides</i> O&K	0	0	0	
	<i>Meoneura vagans</i> (Fallén)	0	0	0	
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Hydrotaea meteorica</i> (L.)	1	0	1	
	<i>Limnophora multipunctata</i>	0	0	0	
	<i>Limnophora variegata</i> (S.)	13	11	24	
	<i>Lispe nuba</i> Wied.	0	0	0	
	<i>Musca domestica</i> L.	1707	377	5483	
			6		
	<i>Musca sorbans</i> Wied.	3	11	14	
	<i>Muscina stabulance</i> (Fallén)	0	1	1	
	<i>Stomoxys calcitrans</i> (L.)	0	1	1	
	<i>Synthesiomia nudiseta</i>	0	0	0	
	<i>Physiphora demandata</i> (Fa.)	4	6	10	
	<i>Piophilila casie</i> (L.)	0	0	0	
	<i>Parasarcophaga dux</i> Thom.	0	0	0	
	<i>Parasarcophaga hirtipes</i> W.	1	1	2	
	<i>Ravinia striata</i> (Fabricius)	1	0	1	
	<i>Sepsis thoracica</i> (Ro.-Des.)	0	0	0	
<i>Coproica digitata</i> (Duda)	0	0	0		
<i>Coproica vagans</i> (Haliday)	0	0	0		

	<i>Copromyza costalis</i> Zettters,	0	1	1	
	<i>Eristalis megacephalus</i> (R.)	0	0	0	
	<i>Eristalis taeniops</i> Wied.	0	0	0	
Aswan, Aswan	<i>Chrysomyia albiceps</i> (Wi.)	10	33	43	
	<i>Lucilia sericata</i> (Meig.)	3	4	7	33.2
	<i>Calliphora vicina</i> Rob-Dis.	0	0	0	
	<i>Hippelate pusio</i> loew	0	0	0	
	<i>Drosophila histrioides</i> O-K.	0	0	0	
	<i>Meoneura vagans</i> (Fallén)	0	0	0	
	<i>Physiphora demandata</i> (Fa.)	0	0	0	
	<i>Piophilila casie</i> (L.)	0	0	0	
	<i>Parasarcophaga dux</i> Thom.	0	0	0	
	<i>Parasarcophaga hirtipes</i> W	0	1	1	
	<i>Ravinia striata</i> (Fabricius)	0	0	0	
	<i>Sepsis thoracica</i> (Ro- De.)	0	0	0	
	<i>Coproica digitata</i> (Duda)	0	0	0	
	<i>Coproica vagans</i> (Haliday)	0	0	0	
	<i>Copromyza costalis</i> Zetter.	0	0	0	
	<i>Eristalis megacephalus</i> (R.)	0	0	0	
	<i>Eristalis taeniops</i> Wied.	0	0	0	
	Sharkia Zagazig	<i>Chrysomyia albiceps</i> (W.)	74	61	135
<i>Eristalis taeniops</i> Wied.		0	0	0	

Table (3): Adult flies collected in the third phase in 2001.

Area	Species	Flies captured		Total No.	Temp.
		Male	female		
Kena	<i>Chrysomyia albiceps</i> (Wied.)	1	0	1	
	<i>Lucilia sericata</i> (Meig.)	2	1	3	32.8
	<i>Calliphora vicina</i> Robin-Dis.	1	0	1	
	<i>Hippelate pusio</i> Loew	1	1	2	
	<i>Drosophila histrioides</i> O & K	1	0	1	
	<i>Drosophila melanogaster</i> Meig.	0	0	0	
	<i>Meoneura vagans</i> (Fallén)	2	2	4	
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Linnophora multipunctata</i> (St.)	1	2	3	
	<i>Linnophora variegata</i> (Stein)	2	1	3	
	<i>Musca domestica</i> L.	2345	2400	4745	
	<i>Musca sorbans</i> Wied.	2	2	4	
	<i>Muscina stabulance</i> (Fallén)	0	1	1	
	<i>Stomoxys calcitrans</i> (L.)	4	5	9	
	<i>Synthesiomysia nudiseta</i> (Van)	0	1	1	
	<i>Physiphora demandata</i> (Fabr.)	0	0	0	
<i>Megaselia scalaris</i> (Loew)	0	0	0		

<i>Piophilila casie</i> (L.)	0	0	0
<i>Parasarcophaga hirtipes</i> Wied.	0	0	0
<i>Ravinia striata</i> (Fabricius)	0	1	1
<i>Sarcophaga carnaria</i> L.	9	17	26
<i>Sepsis thoracica</i> (Rob. - Des.)	24	35	59
<i>Ceroptera algira</i> (Villeneuve)	0	1	1
<i>Coproica digitata</i> (Duda)	0	1	1
<i>Coproica ferruginata</i> (Stenh.)	0	1	1
<i>Coproica vagans</i> (Haliday)	22	52	74
<i>Limosina bifrons</i> Stenham.	3	2	5
<i>Eristalis aeneus</i> (Scopoli)	0	0	0
<i>Eristalis taeniops</i> Wied.	0	0	0

Results and Discussion

This study was carried out in winter and spring and extended to summer and covered 14 Egyptian Governorates.

The survey (table 1) yielded specimens belonging to 16 species, 14 genera and 7 families. F. Muscidae: *Musca domestica* L. with highest density in Behiera, Menoufia, Fayium, Assuit and Qalubia respectively. *Musca domestica* L. and *M. sorbans* Wied. were in all governorates. *Fannia canicularis* (Linn.) and *Hydrotaea meteorica* (L.) not found in Qalyobia and Fayium, while *Limnophora multipunctata* (Stein.) and *L. variegata* (Stein.) disappeared in Assiut. *Muscina stabulans* (Fallén) and *Ophyra Capensis* (Wied.) found in Beheira while *Stomoxys calcitrans* (L.) not in Menoufia and Fayium. F. Calliphoridae: *Chrysomyia albiceps* (Wied.) with highest density in Behiera while *Lucilia sericata* (Meig.) had highest density in Menoufia. The 2 species were found in Behiera, Menoufia & Qalyobia, but not in Assuit and Fayium. F. Otitidae: *Physiphora demandata* (Fabricius) and F. Piophilidae: *Piophilila casie* (L.). not in Fayium. F. Sarcophagidae: *Parasarcophaga hirtipes* Wi. found in Menoufia and Assuit. F. Sphaeroceridae: *Coproica vagans* (Haliday) found in all areas, with highest density in Menoufia and Behiera. F. Sepsidae: *Sepsis thoracica* (R-D) found in Behiera and Assuit.

The survey (table 2) yielded specimens belonging to 27 species, 22 genera and 11 families. F. Muscidae: *M. domestica* with highest density in Aswan, Sharkia, Giza, Kafr El-Shiekh

Dakahlia (Mansora)	<i>Megaselia scalaris</i> (Loew)	1	0	1	
	<i>Piophilu casie</i> (L.)	1	0	1	
	<i>Parasarcophaga hirtipes</i> Wie	0	1	1	
	<i>Ravinia striata</i> (Fabricius)	0	0	0	
	<i>Sarcophaga carnaria</i> L.	0	0	0	
	<i>Sepsis thoracica</i> (Rob. - Des.)	2	5	7	
	<i>Ceroptera algira</i> (Villeneuve)	2	3	5	
	<i>Coproica digitata</i> (Duda)	0	0	0	
	<i>Coproica ferruginata</i>)	0	0	0	
	<i>Coproica vagans</i> (Haliday)	15	72	87	
	<i>Limosina bifrons stenhammar</i>	0	0	0	
	<i>Eristalis aeneus</i> (scopoli)	0	0	0	
	<i>Eristalis taeniops</i> Wied.	0	0	0	
South Sinai (Tour Sinai)	<i>Chrysomyia albiceps</i> (Wied.)	11	25	36	
	<i>Lucilia sericata</i> (Meig.)	0	0	0	29.0
	<i>Calliphora vicina</i> Robineau	3	1	4	
	<i>Hippelate pusio</i> loew	6	9	15	
	<i>Drosophila histrioides</i> O-K	1	1	2	
	<i>Drosophila melanogaster</i> M.	0	0	0	
	<i>Meoneura vagans</i> (Fallén)	7	2	9	
	<i>Fannia canicularis</i> (L.)	0	0	0	
	<i>Linnophora multipunctata</i> (S)	0	1	1	
	<i>Linnophora variegata</i> (Stein)	0	1	1	
	<i>Musca domestica</i> L.	914	1027	1941	
	<i>Musca sorbans</i> Wied.	14	15	29	
	<i>Muscina stabulance</i> (Fallén)	1	0	1	
	<i>Stomoxys calcitrans</i> (L.)	0	0	0	
	<i>Synthesiomyia nudiseta</i> (Van)	0	0	0	
	<i>Physiphora demandata</i> (Fab.)	0	0	0	
	<i>Megaselia scalaris</i> (Loew)	0	0	0	
	<i>Piophilu casei</i> (L.)	1	3	4	
	<i>Parasarcophaga hirtipes</i> W.	0	0	0	
	<i>Ravinia striata</i> (Fabricius)	0	0	0	
	<i>Sarcophaga carnaria</i> L.	0	0	0	
	<i>Sepsis thoracica</i> (R. - D.)	0	0	0	
	<i>Ceroptera algira</i> (Ville.)	1	0	1	
	<i>Coproica digitata</i> (Duda)	0	0	0	
	<i>Coproica ferruginata</i> (Stenh.)	0	0	0	
	<i>Coproica vagans</i> (Haliday)	2	0	2	
	<i>Limosina bifrons</i> Stenhammar	0	0	0	
	<i>Eristalis aeneus</i> (Scopoli)	1	0	1	
	<i>Eristalis taeniops</i> Wied.	0	0	0	

and Menia respectively. *M. sorbans* with highest density in Aswan. *M. domestica* and *M. sorbans* were in all areas while *F. canicularis* was found in Kafr El-Sheikh and Giza. *H. meteorica* in Kafr El-Sheikh and Menia. *L. multipunctata* and *Lispe nuba* were found in Giza but *L. variegata* was in Giza, Sharkia and Menia. *S. calcitrans* disappeared in Aswan but *Synthesiomysia nudiseta* was in Kafr El-Sheikh. F. Calliphoridae: *C. albiceps* and *L. sericata* were in all areas and with highest density in Sharkia. F. Chloropidae: *H. pusio* disappeared in Menia and Aswan. F. Otitidae: *P. demandata* with highest density in Sharkia and disappeared in Aswan. F. Piophilidae: *P. casia* disappeared in Menia, Aswan and Sharkia. F. Sarcophagidae: *P. dux* was in Sharkia, *R. striata* was in Sharkia and Menia, but *P. hirtipes* disappeared in Giza. F. Sepsidae: *S. thoracica* was in Giza & Sharkia. F. Sphaeroceridae: *C. vagans* and *C. digitata* were in Giza. *C. costalis* was in Giza and Menia. F. Syrphidae: *E. megacephalus* was found in Giza and *E. taeniops* in Kafr El-Sheikh.

The survey (table 3) yielded specimens belonging to 29 species, 23 genera and 12 families. F. Muscidae: *M. domestica* with highest density in Dakahlia, El-Wady El-Gedied, Kena, South Sinai. *M. sorbans* was found in all governorates with highest densities in South Sinai. *F. canicularis* was found in Dakahlia while *L. multipunctata* and *L. variegata* disappeared in Dakahlia. *M. stabulans* disappeared in El-Wady El-Gedied, but *S. calcitrans* disappeared in South Sinai and *S. nudiseta* was in Kena. F. Calliphoridae: *C. albiceps* and *L. sericata* with highest density in Dakahlia while *L. sericata* disappeared in South Sinai and El-Wady El-Gedied but *C. vicina* disappeared in Dakahlia and El-Wady El-Gedied. F. Chloropidae: *H. pusio* disappeared in El-Wady El-Gedied. F. Milichiidae: *M. vegans* was found in all areas. F. Piophilidae: *P. casia* disappeared in Kena. F. Otitidae: *Physiphora demandata* was found in Dakahlia. F. Phoridae: *M. scalaris* was found in Dakahlia. F. Sarcophagidae: *P. hirtipes* was found in Dakahlia, while *S. carnaria* and *R. striata* were found in Kena. F. Sepsidae: *S. thoracica* was found in Dakahlia and Kena but not in South Sinai and El-Wady El-Gedied. F. Sphaeroceridae: *C. vagans* and *C. algira* disappeared in El-Wady El-Gedied while *C. ferruginata*, *C. digitata* and *L. bifrons* were found in Kena. F. Syrphidae: *E. aeneus* was in South Sinai

while *E. taeniops* was in El-Wady El-Gedied. *M. domestica* was the most abundant in all governorates. This agreed with Morsy *et al.* (1991); Amin *et al.* (1997); Abdel Halim *et al.* (2004). *C. vicina* was found in places where decaying fish parts accumulated and agreed with James (1947); Shaumar *et al.* (1989); Shaumar and Kamal (1983), but not with Amin *et al.* (1998).

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