Journal of the Egyptian Society of Parasitology, vol. 17 No. 1, 1987.

MOSQUITO DISTRIBUTION IN QALUOBIYA GOVERNORATE, EGYPT

By

NAHED M. HILMY*, A.I. MERDAN**
and A.A. IBRAHIM*

Department of Entomology, Faculty of Science, Benha University and Research and Training Center on Vectors of Diseases, Ain Shams University, Cairo, Egypt***

ABSTRACT

Eight culicid species, *Culex pipiens, C. antennatus, C. univittatus, Aedes caspius, Aedes detritus, Culesita longairiolata, Ano. pharoensis, Ano. tenebrosis. Culex pipiens* were found in five indicator areas. Ten wells and old Sakia pits were chosen from five villages in Qaluobiya Governorate throughout one year.

Wells and old Sakia pits were found to play a major role in mosquito problem in Qaluobiya Governorate. Extensive aquatic vegetation specially duck-weed had a marked effect on breeding of culicidae immature stages.

INTRODUCTION

During the year 1983, the Faculty of Science in Benha established a mosquito control project in Qaluobiya Governorate. One of the most important subjects in this project is to study the mosquito distribution in the Governorate. This study aimed to identify the different types of mosquitoes present in Qaluobiya Governorate, specially those, which are responsible for filarial transmission. Wells and old Sakia pits were found to

be one of the most favourable breeding places for *Culex pipiens* Kirkpatric (1925), Nabila et al. (1981) and Kaschef et al. (1982). Duck weed was suggested to be utilized in anti-mosquito work as places covered by it contain fewer larvae ; Vivitakholm, Angerilli and Beine (1980) and Hobbs and Molina (1983).

MATERIAL AND METHODS

1. Selection of indicator areas : Five areas were chosen for this study representing different localities of Qaluobiya Gov. Those areas are : El-Safa, Emye, Esbet-El-Arab, El-Dare and Ezbet-El-Kady.

2. Larval Survey : Larval sampling was made from different breeding places (Ten Wells, old Sakia pits). Net dippers were used in larval collections.

3. Each breeding place was surveyed on monthly basis; monthly samples were transfered to the laboratory labelled for further processing regarding counting, identification of different species using Gad's Key (1955).

RESULTS

Results are shown in tables (1, 2, 3 and 4).

DISCUSSION

1 — Larval Survey : All of the five areas chosen for this work were villages highly populated with people, chickens and animals, breeders specially in El-Safa and Ezbet-El-Arab. The other people of these villages are farmers in rice fields.

1 — According to indicator areas : Out of 84696 larvae collected, 30047 were form El-Safa, 19749 from Ezbet-El-Arab, 14910 from Emye, 13727 from Ezbet-El-Kady, 5611 from El-Dare and 652 from Ezbet-Osman.

2 — According to seasonal distribution the spring season

Table 1 : Mosquito larvae collected from Qaluobeya Governorate during 1984/1985.

Endicator area	Total larval collection	*Culex pipiens*	*Culex antennatus*	*Culex univittatus*	*Aedes caspius*	*Aedes detritus*	*Culesita longairiolata*
El-Safar	30647	26848	30	0	0	15	3156
Emye	14910	10566	263	95	0	364	3622
Ezbet-El-Arab	19749*	16872	2745	44	29	59	0
El-Dare	5611	5260	0	0	1	29	321
Ezbet-El-Kady	13727**	12017	47	0	0	0	1663
Ezbet Osman	652	0	652	0	0	0	0
Total	84696	71561	3737	139	30	467	8762
%		(84.5)	(4.4)	(0.2)	(0.04)	(0.6)	(10.3)

* one *Anopheles pharoensis* larva was found.

** one *Anopheles tenebrosis* larva was found.

Table 2 : Monthly and seasonally distributien of mosquito larvae in Qaluobeya Governorate, during 1984/1985.

Seasons	Months	Average no. of mosquitoes/dip						Average	
		El-Safa	Emye	Ezbet El-Arab	El-Dare	Ezbet El-Kady	Ezbet	Monthly	Seasonally
Spring	March	183.2	79.7	73.8	69	82.8	0	81.4	160.8
	April	236.4	30.7	880.7	50.7	239.4	0	239.7	
	May	253.6	111.7	314.7	51.2	236.1	0	161.2	
Summer	June	224.9	53.1	144.3	54.2	201.2	0	113	112.5
	July	212.7	164.6	72	48.1	101.6	31.1	111	
	August	238.7	317.9	51.7	36.8	14.5	20.9	113.4	
Autumn	Sept	233.7	85.3	208.8	24.3	93.3	13.2	109.8	124.2
	Oct	495.5	43.9	84.1	44.4	150.6	0	136.9	
	Nov	259.3	151.5	57.4	75.4	94.8	0	125.9	
Winter	Dec	251.7	211.2	68.7	40.4	34.7	0	130.3	87.4
	Jan	139.9	130	31.1	37.4	20.1	0	75	
	Feb	175.1	111.4	9.4	29.2	15.5	0	66.8	

Table 3 : Seasonal larval distribution of mosquito species in Qaluobiya Governorate during 1984/1985.

Seasons	*Culex pipiens*	*Culex antennatus*	*Culex univittatus*	*Aedes caspius*	*Aedes detritus*	*Culesita longairiolata*
Spring	(33.7) 2408.3	(0.3) 1.3	(3.6) 0.5	0	0	(55.2) 483.6
Summer	(25.3)* 1808.1	(30.8) 115.2	(55.4) 7.7	(96.7) 2.9	(24.2) 11.3	(15) 131.3
Autumn	(26.1) 1869.3	(60.8) 227.3	(41) 5.8	(3.3) 0.1	(74.3) 34.7	(6.4) 56.5
Winter	(15) 1070.4	(8) 29.9	0 0	0 0	(1.5) 0.7	(22.4) 204.8

* One larva of *Anopheles pharoensis* and one larva of *Anopheles tenebrosis* were found.

Table 4 : Effectiveness of duckweeds on colonization of immature stages of mosquitoes in El-Safa village from April 1984 to July 1985.

	Site A				Site B				Site C			
	No.of larvae & pupae	Temp.	pH	density of duckweed	No. of larvae & pupae	Temp.	pH	density of duckweed	No. of larvae & pupae	Temp.	pH	density of duckweed
April	166	18.5	7.5	+++	70	19	8.5	+++	731	18.5	7.5	+
May	0	20.5	8	+++	225	20	8	++	935	19	8	+
June	0	22	7.5	+++	0	21	7.5	+++	1138	22	8	+
July	0	27	8	+++	0	24	7.5	+++	805	24	8.5	+
August	0	25	7	+++	0	26.5	7.5	+++	353	24	7.5	+
Sept	34	24	7	+++	0	27	7	+++	480	24	7	+
Oct	64	21	7	++	0	21	7	++	2857	21	7	+
Nov	1334	19	7	+	150	19	7	++	1566	20	6.5	++
Dec	1794	16	7	+	438	17	7	+	1846	18	7	+
Jan	1080	12	6	+	178	14	6.5	+	1017	16	6	+
Feb	477	10	6	++	323	12	6.5	++	741	13	6.5	+
March	350	16	6.5	++	485	16	6.5	++	345	15.5	6.5	+
April	145	18	6.5	+++	210	18.5	6.5	++	820	17	7	+
May	14	19.5	7	+++	55	20.5	7	+++	740	18.5	6.5	+
June	0	21	7.5	+++	0	21	7	+++	1211	20	7	+
July	0	28	7	+++	0	29	7.5	+++	1110	28	7.5	+
AV.	903.6	19.8	7		133.4	20.3	7.2		1044.6	19.9	7.1	

+++ dense cover of duckweed on water surface
++ thin monolayer of duckweed on water surface
+ little amounts of duckweed on water surface

showed the highest incidence of *C. pipiens* (33,7%) followed by Autumn and Summer (26.1% and 25.3%) respectively, the lowest incidence was in winter (15%). This disagrees with the results of Mahdi (1963) in Morsafa and Wassif (1969) in Delta, Nabila et al. (1981) and Kaschef et al. (1982) who found that the highest incidence of this species is during Winter. *Culex antennatus* showed high incidence in Autumn (80.8%) followed by Summer (30.8%), Winter (8%) and Spring (0.3%). This agrees with Wassif (1969), Nabila et al. (1981) and Kaschef et al. (1982). *Culex univittatus* larvae were found in very few numbers. This observation agrees with the results of Wassif (1969), Nabila et al. (1981) and Kaschef et al. (1982).

Aedes caspius and *Aedes detritus* were found also in few numbers during this study. *Culesita longairiolata,* the highest incidence was in spring (55.2%) followed by winter (24.4%) summer (15%) and autumn (6.4%). These findings agree with Wassif (1969), Nabila et al. (1981).

Only one larvae of *An. pharoensis* and one from *An. tenebrosis* were found through the whole year, this may be due to the fact that wells and old Sakia pits are not the preferred places for these species.

3 — According to breeding places : The frequency of finding larvae in different breeding places is a factor in determining the decided preference as regarding the breeding habitat. Well and old Sakia pits proved to play an important role in mosquito problem in Qalubiya Governorate and Egypt. This role is important due to the following : (a) It is one of the most favourable breeding places for *Culex pipiens* (84.5%). This result agrees with Shawarby et al. (1968), Nabila et al. (1981) and Kaschef et al. (1982). (b) Wells and old Sakia pits are distributed throughout the whole country Kirkpatrik (1925) and rarely dry up throughout the whole year. So, that wells represent an alternative place for breeding in case of any unfavourable conditions.

3 — Great effort is usually needed for larval control in wells

and old Sakia pits, inaccesibility, small size, long time needed to reach all of these places even in a small area, may be the reason why these places are rarely visited by spraymen. On the other hand, the stability of these places facilitates long term control e.g. control release program or infestation by predatory fish.

4 — Extensiveness of aquatic vegetation : The absence or presence of a few number of immature mosquitoes in some breeding places as shown in Table (4) may be due to the presence of duck-weed on water surface. Vivitakholm (1980), Angerilli and Beine (1980) and Hobbs and Molina (1983) studied the same phenomena. The inhibitory effect of duck weed on mosquito larvae may be due to the following : (a) Duck-weed may act as a mechanical barrier for oxygen needed for respiration. (b) Duck-weed may affect the kind and amount of particulate matter, which can affect oviposition in two ways, firstly, by altering the colour of water or its background (Kennedy 1942) ; (Lund 1942) ; (Bates 1949) ; (Williams 1962) (Belton 1967) ; (Snow 1971) ; (Yap 1975), and secondly, by altering its chemical composition (Ikeshoji et al, 1975). There may be also a direct effect of the plant on the visibility of the water surface as has been found by (Furlow and Hays, 1972).(c) The plant may influence water temperature so that few number of eggs will be deposited or slow larval development may take place.

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