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ESTIMATION OF THE AMPLICAECUM LARVAL INFESTATION IN TILAPIA SPP. AT HIGH DAM LAKE, EGYPT

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SUMMARY

Today, *Amplicaecum* type larvae are one of the fascinating group of Ascaridídea infesting *Tilapia nilatica* and *galilae* in High Dam Lake, Egypt. The present study was revealed a total rate of infestation amounting to 33.01% with intensity of larval stages 1-14 larvae/fish. The diagnosed samples covered 22 fish productive areas in western and eastern coasts of the lake from November 1993 to February 1994. The present estimation of Ascaridídea indicated that 20 fish productive areas of *Tilapia* spp. are positive cases to *Amplicaecum* larval infestation.

INTRODUCTION

The *Amplicaecum* larvae have been recorded in Tilapia spp. since 1980 where the larvae were localised and uncapsulated in pericardial and branchial cavities and in the sinus venosus of *Tilapia's* heart with incidence of 69-94% and intensity of 3-8 larvae/fish in Sudan Nile (Ilan Paperna, 1980). Moreover, the larvae were recorded, isolated and identified at a relatively high rate of infestation in *Tilapla* spp. at High Dam Lake with incidence of 52.38% and intensity of 2-13 larvae/fish (Mahmoud et al., 1989). The life span of Ascaridídea larvae in fish is unknown but it is probable that they will remain in the fish until they are devoured by the final host, as this is the pattern in most larval nematodes of fish (Khalil, 1969). The Ascaridídea larvae play an important role in pathogenesis of human, animal and birds (Myers, 1975 and Soulsby, 1982), while genus *Amplicaecum* larva migrans in freshwater fish induced a significant pathologic alteration (Ibrahim and Mahomoud, 1988). The achievement of the present study is concerned with two proper items the first one is to clarify the rate of larval infestation and intensity in *Tilapia nilotica* and *galilae* including fish samples representing a different body size and weight in the lake. The second item is to estimate 22 fish productive areas which were selected from 41 in western and eastern coasts at High Dam Lake to deduce the frequency of infestation in these areas for the first record in Egypt.

MATERIAL AND METHODS

A Total of 209 frozen samples of *Tilapia nilotica* and *galilae* were received from 22 fish productive areas in western and eastern coasts of the High Dam Lake in Aswan Province, the samples were packed in plastic bags including 1-3 fish representing 3 different body size and weight (small, medium and large) with aid of Misr Aswan Fish Production and Processing Factory schemes (Table 2). The samples covered 4 months of production from November 1993 to February 1994 in the lake. The fish samples were submitted

to Fish Diseases Department, Animal Health Research Institute to estimate the rate of infestation and intensity of *Amplicaecum* larvae (Fig. 1) according to the key of Syme, (1966) and Roberts, (1978). The isolation, identification and favorite site of infestation of *Amplicaecum* larvae in fish were proved and confirmed according to Yamaguti (1958), Ilan Paperna (1980) and Mahmoued et al., (1989). The statistical analysis was done in the estimation acording to Snedecor and Cochran (1974).

RESULTS AND DISCUSSION

The results of the present study are recorded in the following tables, plate and figure:

1. **Table (1):** The rate of *Amplicaecum* larvae in *Tilapia galilae* and *nilotica* at High Dam Lake, Egypt (November 1993-February, 1994).

2. **Table (2):** The average of the body dimensions and weight of infested fish.

3. **Table (3):** The intensity of Amplicaecum larvae/fish.

4. **Table (4):** The frequency of infestation in selected fish productive areas.

5. **Plate (1):** The selected fish productive areas pointing positive and negative areas in western and eastern coasts at High Dam Lake.

6. **Fig. (1):** The macroscopic appearance of *Amplicaecum* larvae 2-3 cm in length.

The present study proved that *Amplicaecum* larvae are localised uncapeulated in the pericardial and branchial cavities and in sinus venosus of Tilapia's heart, while the muscle tissues and other organs in the body cavity are free from infestation, a finding that coincides with that recorded by Ilan Pagerna, (1980) and Mahmound et al., (1989). The rate of infestation in the present study 33.01 showed a regression than that recorded by Mahmoud et al., (1989) who recorded a rate of 52-38%. The intensity of larval infestation was proved to be 1-14 larvae/fish (Table 3) which is comparable with that reported by Mahmoud et al., (1989) and more than that recorded by Ilan Paperna, (1980) who gave a rate of 3-8 larvae/fish in Sudan Nile. Fish of large size were the heavily infested fish with Ascarididea recording 14.35% (Table 1) which is in agreement with Khalil, (1969) and Ilan Paperna, (1980). The rate of infestation with *Amplicaecum* larvae in November, 1993 was low in *Tilapia gailiae*and *Tilapia nilotica* figuring up to 26.6% and 3.33%, respectively.

However, harvests of December 1993 and February 1994 recorded a higher rate of infestation (34.78%) in *Tilapia galilae* and 41.66% in *Tilapia nilotica* (Table 1).

This fluctuation of infestation rate may be ascribed to environmental factors that help and induce the pattern of infestation (Khalil, 1969). The current primary goal of the applicable estimation is to develop effective methods of controlling the Ascaridideal larvae through the determination of the period of regression and increase of larval infestation (Table 1) and screening the area of heavy parasitism (Table 4) and Plate (1). The present studies revealed 20 out of 22 selected fish productive areas in western and eastern coasts High Dam Lake to be considered as areas of positive *Amplicaecum* larval infestation. The highly and more frequent infested areas are Tushka (west), Sayala (west) and El-Genina (east), while Khor Rahma (east) and Khor Monam (east) were negative in estimation. The present results proved that the conventional way to measure the impact of the fish diseases and its control on aquatic community is to estimate the intensity and infestation rate and to determine the

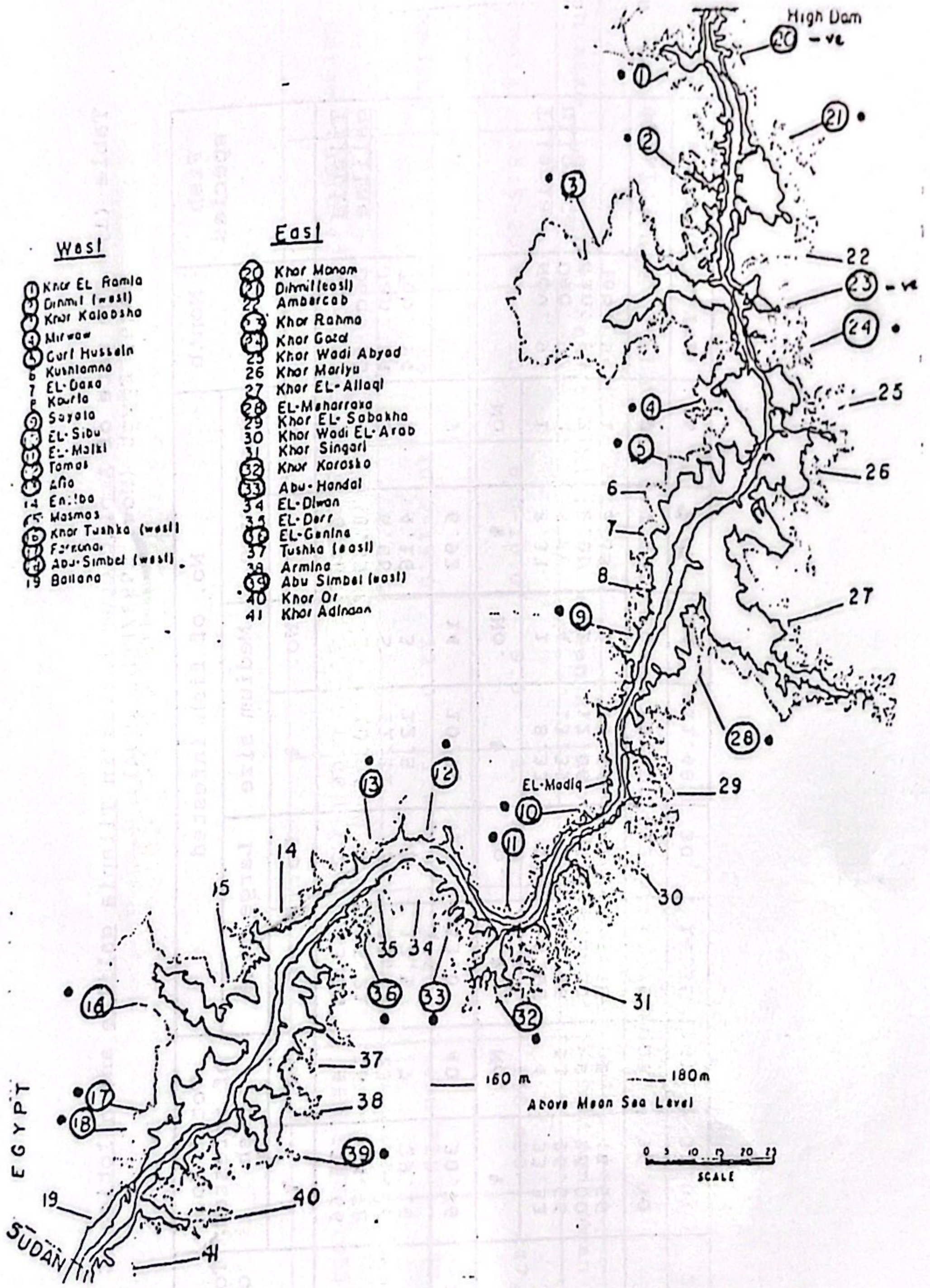

Plate (1): The selected fish productive areas pointing (•) positive and (←) negative areas in western and eastern coasts at High Dam Lake.

Table (1): The rate of Amplicaecum larvae in Tilapia galilae and nilotica at High Dam Lake, Egypt (Nov. 1993/Feb. 1994).

Fish species	Month	No. of fish infested						Total No. of infested fish		Total No. of fish
		Small size		Medium size		Large size				
		No.	%	No.	%	No.	%	No.	%	
Tilapia galilae	Nov. 93	1	6.66	1	6.66	2	13.33	4	26.66	15
	Dec. 93	4	8.69	5	10.86	7	15.21	16	34.78	46
	Jan. 94	3	6.66	5	11.11	5	11.11	13	28.88	45
	Feb. 94	1	4.16	3	12.5	3	12.5	7	29.16	24
Total		9	6.92	14	10.76	17	13.07	40	30.76	130
		No.	%	No.	%	No.	%	No.	%	
Tilapia nilotica	Nov. 93	1	8.33	1	8.33	2	16.66	4	33.33	12
	Dec. 93	2	6.66	4	13.33	5	16.66	11	36.66	30
	Jan. 94	2	8.00	3	12.00	4	16.00	9	36.00	25
	Feb. 94	1	8.33	2	16.66	2	16.66	5	41.66	12
Total		6	7,59	10	12.65	13	16.45	29	36.70	79
Total T.G. & T.N.		15	7.17	24	11.48	30	14.35	69	33.01	209

Table (2): The average of the body dimensions and weight of infested fish.

Fish size	Length/cm	Mean x'	Width/cm	Mean x'	Depth/cm	Mean x'	Weight/gm	Mean x'
1. Small	18.5-20.0	20	8.0-10.0	9.0	1.7-2.4	2.2	150-400	247.7
2. Medium	20.0-35.0	26	10.0-15.0	12.0	1.7-2.4	2.2	400-780	537.5
3. Large	35.0-42.0	37	15.0-17.5	13.50	1.8-2.8	2.7	780-1500	1053.6

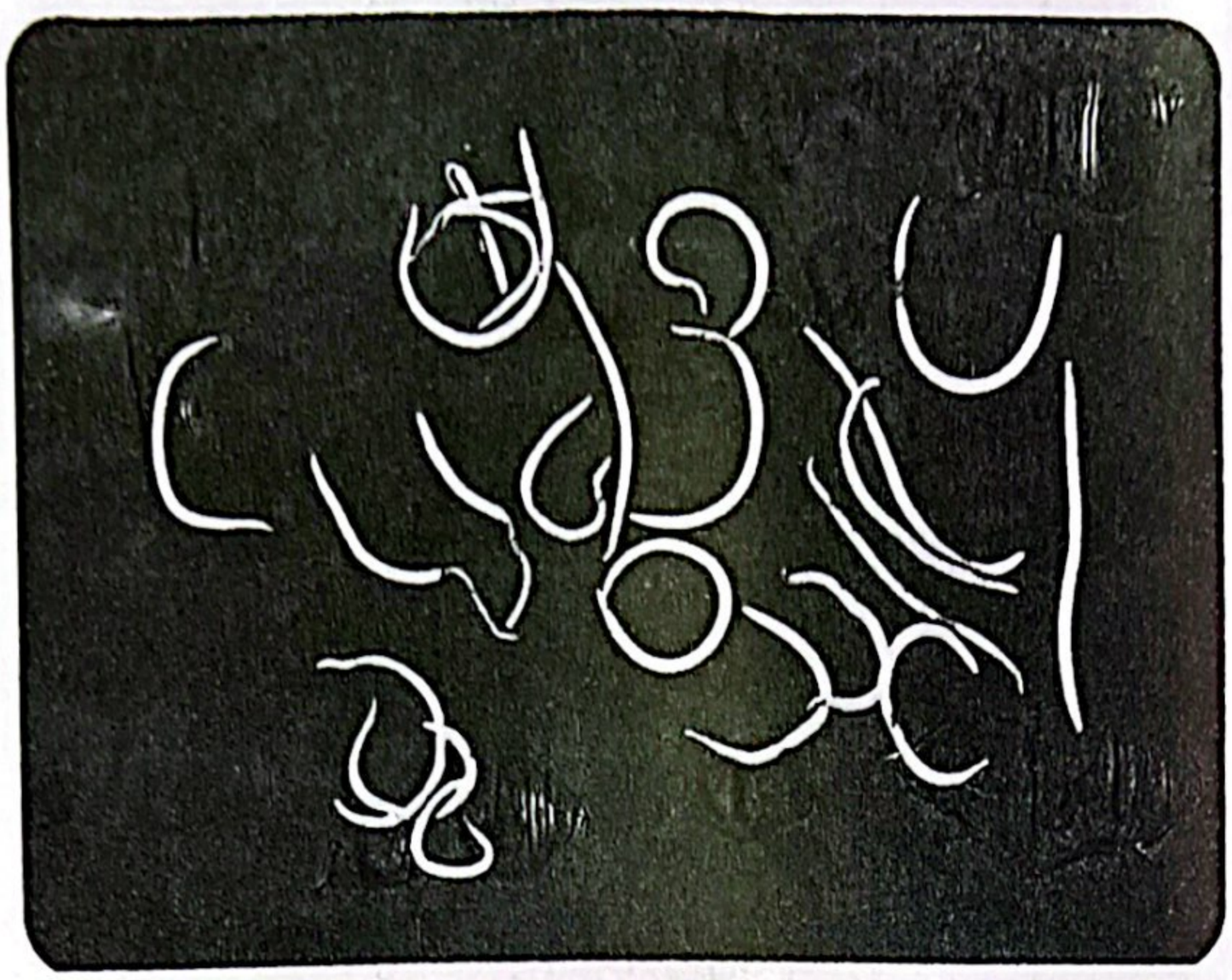

Fig. (1): The macroscopic appearance of Amplicaecum larvae 2-3 cm in length.

Table (3): The intensity of Amplicaecum larvae/fish.

Fish size	Number of larvae / fish	Mean x'
1. Small	1 - 9	3.5
2. Medium	1 - 11	6.0
3. Large	1 - 14	6.6

Table (4): The frequency of infestation in selected fish productive areas from November 1993 to February 1994.

No.	Infested fish productive areas	No. in plate	Frequency of infested fish/4 months		
			Small size	Medium size	Large size
1	Kafr El-Ramla	1	1	-	1
2	Dihmit (west)	2	-	-	1
3	Khor Kalabsha	3	1	1	1
4	Mirwaw	4	-	-	1
5	Garf Hussein	5	-	1	1
6	Sayala*	9	2	3	2
7	El-Sibu	10	1	1	2
8	El-Malki	11	2	1	1
9	Tomas	12	2	-	-
10	Afia	13	2	-	-
11	Khor Tushka (west)	16	1	-	3
12	Forkondi	17	1	2	1
13	Abu-Simbel (west)	18	1	1	2
14	Khor Monam**	20	-	-	-
15	Dihmit (east)	21	-	-	1
16	Khor Rahma**	23	-	-	-
17	Khor Gazal	24	1	2	2
18	El-Meharraka	28	1	1	2
19	Khor Korosko	32	1	1	1
20	Abu-Handal	33	2	1	1
21	El-Genina*	36	1	3	-
22	Abu-Simbel (east)	39	1	1	2

* Highly infested areas; Sayala, Khor Tushka (west) and El-Genina.
** Negative areas; Khor Monam, Khor Rahma.

areas of positive infestation of the hosts which might have a direct effect on the economic costs of fish production in the lake.

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