

**Journal of Union of Arab
Biologists
Cairo**



A GENERAL SURVEY ON THE HELMINTH PARASITES INFECTING SOME FISHES FROM THE MEDITERRANEAN SEA

DAYHOUM A.M.L. AL-BASSEL

Department of Zoology, Faculty of Science, Cairo University,
Fayoum Branch

Key words : Helminth parasites -Fishes - Mediterranean Sea.

ABSTRACT

465 fishes belonging to 7 families and 9 genera caught from the Libian coastal waters near Misurata, were examined for helminth parasites. Helminth parasites were found in all genera of fish examined. 330 fish examined (70.96%) were found to be infected. Trematode infections were found in all species of fishes except *Galeorhinus galeus*. Nematode infections were found in all species of fishes except *Galeorhinus galeus* and *Liza ramada*. Cestode infections were found in all species of fish except *Liza ramada* and *Pagrus coeruleostictus*. Incidence and intensity of infection with helminth parasites were recorded. A comparison between the previous results and the present work were reported.

INTRODUCTION

An important implication of the interest in the marine environment as an alternative source of food would be an increase in the study of fish

parasitology as well as in fish transmitted zoonotic diseases. Willians and Jones (1976) reviewed the importance of the subject in view of the increasing interest among biologists veterinary and medical

parasitologists and others concerned with mariculture and fish farming.

In Egypt, the study of the helminth parasites of marine fishes has received a good deal of attention from parasitologists working in that field [e.g. Nagaty (1973), Saoud et al. (1983) and Saoud and Ramadan (1983)]. The main approach of these studies on the helminth parasites infecting fishes was essentially taxonomical, dealing with the identification and description of helminth parasites. On the other hand very little was done on the biological and ecological aspects of these parasites in their fish hosts.

The present work was done to fill in this gap and augment our knowledge on the biology of the host-parasite relationships, particularly in the coastal water of Libya, which is the longest coastal waters on the Mediterranean Sea in the Arab countries.

MATERIALS AND METHODS

Most of the fishes collected during the present investigation were collected

alive by fisherman from the coastal waters at Misurata city in Libya. Occasionally, few fish were bought from the fish market of Misurata. Fishes were transported directly to the laboratory of the Faculty of Science in Misurata and examined for helminth parasites as soon as possible. Trematode and cestode parasites were first relaxed, then fixed in hot 70% alcohol or 5% formalin. The parasites were then stained using aceto-alum carmine stain. Nematodes were fixed in hot 70% alcohol and cleared in glycerine. Collected fishes were identified according to the guidebook of Marine Biology Research Centre in Libya (1990). Species of fishes as well as the local, arabic and scientific names are shown in table (1).

RESULTS

I- General incidence of helminth parasites in examined fishes :

Table 2 gives a summary of helminth parasites infecting the fishes examined during the present investigation. Helminth infections were reported in all genera of the examined

fishes. 330 fish (70.96%) were found to be infected.

The highest incidence of parasites (94.3%) was recorded in *Boops boops* and the lowest (44.6%) in *Trachurus mediterraneus*.

II- Incidence of the major groups of helminth parasites in investigated fishes :

Table 3 gives a summary of the infections with the major groups of helminth parasites.

1- Trematode infections :

Out of 465 fishes 143 fish (30.75%) were found to be infected with trematodes. These infections were reported in all genera of the examined fishes, with the only exception of the species *Galeorhinus galeus* which were free of trematode infection. The highest incidence of trematodes (70%) was recorded in *Liza ramada* and the lowest (6%) in *Pagrus coeruleostictus*.

2- Cestode infections :

Out of 465 fishes, 101 (21.72%) were found infected with cestodes. These infections were reported in *Serranus scriba*, *Labrus bergylata*, *Mullus surmuletus*, *Trachurus*

mediterraneus, *Galeorhinus galeus* and *Boops boops*. The highest incidence of cestodes (72%) was recorded in *Galeorhinus galeus* and the lowest (6%) in *Mullus surmuletus*.

3- Nematode infections :

Out of 465 fishes, 160 (34.40%) were found to be infected with nematodes. These infections were reported in *Serranus scriba*, *Spondylisoma cantharus*, *Labrus bergylata*, *Mullus surmuletus*, *Trachurus mediterraneus*, *Boops boops* and *Pagrus coeruleostictus*. The highest incidence of nematodes (80%) was recorded in *Mullus surmuletus* and the lowest (18.86%) in *Boops boops*.

III- Intensity of infections with the major groups of helminth parasites:

Table 4 gives a summary of the intensity of helminth infections in all fishes examined. The highest range of infection 50-100 trematodes/Fish was recorded in *Liza ramada* and the lowest 3-7 cestodes/Fish in *Labrus bergylata*.

1- The intensity of trematodes :

The highest number of trematodes (100/Fish) was recorded in *Liza ramada* and the lowest (4/Fish) in *Trachurus mediterraneus*.

2- The Intensity of nematodes :

The highest number of nematodes (33/Fish) was recorded in *Boops boops* and the lowest (5/Fish) in *Trachurus mediterraneus*.

3-The intensity of cestodes:

The highest number of cestodes (36/Fish) was recorded in *Galeorhinus galeus* and the lowest (3/Fish) in *Labrus bergylata*.

DISCUSSION

Nahhas and Cable (1964) described 40 species of digenetic trematodes from marine fishes in Curacao and Jamaica. Parukhin (1970) recorded several trematodes from the fishes of the Red Sea and Gulf of Aden. Hassan (1976) made a comprehensive study of helminth parasites mainly cestodes of marine elasmobranchs collected from the Egyptian coastal waters of the Mediterranean and Red Sea. Ramadan (1979) recorded 34 species of trematodes and cestodes from some fishes in the Red sea. Khalil (1981)

studied the relationships between length, weight and sex of fishes and the internal parasites in some fishes from the Mediterranean Sea.

Saoud et al. (1983) reported cestodes and nematodes in marine fishes from the Egyptian coastal waters, their incidence were 25.11% and 3.30% respectively. In the present work the incidence of cestodes and nematodes infections in marine fishes from the Libian coastal waters were 21.72% and 34.40% respectively. The incidence of trematode infections in the present work was 30.75%, but Saoud et al. (1983) reported no trematode infections. Saoud et al. (1983) reported double infections with cestodes + nematodes their incidence was 7.21%, but in the present work there are no double infections with cestodes + nematodes. Saoud and Ramadan (1983) reported trematodes in marine fishes from the Red Sea, their incidence was 48.5%, but in the present work the incidence of trematode infections was 30.75%.

Table 5 gives a summary of the comparison between the results of Saoud and Ramadan (1983) and the present work. Saoud and Ramadan (1983) reported the infection with trematodes in 4 families of fishes, Serranidae, Sparidae, Mullidae and Labridae, their incidence were 47.6%, 22.9%, 64.2% and 60.8% respectively, but in the present work the incidence of infections in the same 4 families were higher reaching 70%, 78.06%, 86% and 64.8% respectively. Thus the above conclusion indicate that the incidences of trematodes in fish from the Mediterranean is more than the incidence of trematodes in fish from the Red Sea.

The exposure of fishes to heavy metals and other toxicants, the pathological conditions in fish exposed to sediments provide an abundance of food for a variety of ectoparasites, such as monogeneans, supporting their growth and reproduction (Overstreet, 1993). The domestic sewage promotes a rich growth of phytoplankton available directly or indirectly to intermediate hosts of

metazoan parasites. For example, fish kills in the Main River, Germany, have been attributed to metacercariae of *Bucephalus Polymorphus* produced by a bivalve mollusc fed indirectly by polluting wastes (Schaefer and Hoffmann, 1985).

Over 6 million tons of solid materials of human origin are discharged each year in the world seas; most of them are pollutants of industrial source (CGPM, 1972).

From the above, I believe that the relationships between the polluted water in the Mediterranean Sea and the fish parasites is present. Thus the pollution increase the infection of fishes with helminth parasites (Overstreet 1993).

REFERENCES

- CGPM (1972). Etat de al pollution marine en Mediterranee et reglementation. Etud. Rev. Cons. Gen. Peches Mediterr., 51: 70.
- HASSAN, S.H. (1976). Studies on some parasitic worms

- of marine fishes in Egypt. Ph.D. Thesis, Mansoura University.
- KHALIL, A.A. (1981). Studies on the internal helminth parasites of some fishes from the Mediterranean Sea. M.Sc. thesis, Dept. of Zoology, Faculty of Science, Tanta University.
- MARINE BIOLOGY RESEARCH CENTRE (1990). Photo guide of some economic fishes in Libya. Publication of Edfera center, Paris. P.P. 208.
- NAGATY, H.F. (1973). Trematodes of fishes from the Red Sea. *Bull. Zool. Soc. Egypt.*, 25 : 1-13.
- NAHHAS, F.M. and CABLE, R.M. (1964). Digenetic and Aspidogastriid trematodes from Marine fishes of Curacao and Jamaica. *Tulane stud. Zool.*, 11: 169-228.
- OVERSTREET, R.M. (1993). Parasitic diseases of Fishes and their Relationship with Toxicants and other Environmental Factors. *Pathobiology of Marine and Estuarine organisms*, CRC Press, Boca Raton, FL. 113 - 155.
- PARUKHIN, A.M. (1970). Study of the trematode fauna of fish in the Red Sea and Gulf of Aden. *Biologiya Marya, Kiev.*, 20: 187 - 213.
- RAMADAN, M.M. (1979). Studies on Helminth parasites of some Red Sea fishes. Ph.D. Thesis. Dept. Of Zoology, Faculty of Science, Ain Shams University.
- SAOUD, M.F.A. and RAMADAN, M.M. (1983). Studies on digenetic trematodes of some Red Sea fish. *Qatar Univ. Sci. Bull.*, 3 : 141-167.
- SAOUD, M.F.A.; RAMADAN, M.M. and HASSAN, S.H. (1983). A general survey on the Helminth parasites of some Elasmobranchs from the Egyptian coastal waters of the Mediterranean and the Red Sea. *Bull. Fac. Sci., K.A.U. Jeddah*, 7: 70-81.

SCHAEFER, W. and HOFFMANN,
R. (1985). Fish Kills
in Main River. *Fischer
and Teichwirt*, 36(7):
199 - 202.

WILLIAMS, H.H. and JONES, A.
(1976). Marine
helminths and human
health, C I H
Miscellaneous Publ. No.
3, 47. PP.

TABLE 1 : SCIENTIFIC AND LOCAL NAMES OF FISHES EXAMINED AND OTHEIR FAMILIES

Scientific name	Local name	Arabic name
1- Family : Serranidae <i>Serranus scriba</i>	Bacroon	
2- Family : Labridae <i>Labrus bergylata</i>	Khodaer	
3- Family : Mullidae <i>Mullus Surmuletus</i>	Trelia Hager	
4- Family : Carangidae <i>Trachurus mediterraneus</i>	Sauro.	
5- Family : Triakidae <i>Galeorhinus galeus</i>	Calb Al-Bahr	
6- Family : Sparidae <i>Boops boops</i>	Boga	
<i>Pagrus coeruleostictus</i>	Morgan	
<i>Spondyliosoma cantharus</i>	Tanote	
7- Family : Mugilidae <i>Liza ramada</i>	Bouri	

TABLE 2 : INCIDERCE OF HELMINTH PARASITES IN The EXAMINED FISHES

Hosts	Total No examined fishes	Positive infection	
		No	%
<i>Serranns scriba</i>	50	35	70
<i>Labrus bergylata</i>	54	35	64.8
<i>Mullus surmuletus</i>	50	43	86
<i>Trachurus mediterraneus</i>	56	25	44.6
<i>Galeorhinus galeus</i>	50	36	72
<i>Boops boops</i>	53	50	94.3
<i>Pagrus coeruleostictus</i>	50	27	54
<i>Spondyliosoma cantharus</i>	52	44	84.6
<i>Liza ramada</i>	50	35	70
Total	465	330	70.97

Table 4 : INTENSITY OF INFECTION WITH MAJOR GROUPS OF HELMINTH PARASITES

Hosts	Total No of fish examined	Intensity range and mean of parasites		
		Trematodes	Nematodes	Cestodes
<i>Serranus scriba</i>	50	7-16 (8)	9-20 (13)	2-9 (4)
<i>Labrus bergylata</i>	54	7-14 (9)	8-26 (16)	3-7 (4)
<i>Mullus surmuletus</i>	50	8-13 (9)	8-28 (18)	7-10 (8)
<i>Trachurus mediterraneus</i>	56	4-8 (6)	5-13 (9)	4-6 (5)
<i>Galeorhinus galeus</i>	50	0	0	10-36 (19)
<i>Boops boops</i>	53	11- 27 (15)	11-23 (14)	9-18 (10)
<i>Pagrus coeruleostictus</i>	50	5-10 (7)	15-24 (17)	0
<i>Spondyliosoma cantharus</i>	52	10-17 (13)	11-23 (18)	0
<i>Liza ramada</i>	50	50-100 (71)	0	0

TABLE 5 : A COMPARISON BETWEEN TWO SURVEYS CARRIED OUT ON TREMATODES OF MARINE FISHES FROM TWO LOCALITIES

Hosts families	Saoud and Ramadan (1983) from Red Sea Fishes			Present work from Mediterranean Sea fishes		
	No. Ex.	No. infec.	%	No. Ex.	No. infec.	%
Serranidae	42	20	47.6	50	35	70
Sparidae	83	19	22.9	155	121	78.06
Mullidae	62	43	64.2	50	43	86
Labridae	102	62	60.8	54	35	64.8
Total	294	144	48.98	309	234	75.73

TABLE 3 : INCIDENCE OF INFECTIONS WITH THE MAJOR GROUPS OF
HELMINTH PARASITES IN THE EXAMINED FISHES

Hosts	Total No of fish Examined	Positive infection					
		Trematodes		Nematodes		Cestodes	
		No.	%	No.	%	No.	%
<i>Serranus scriba</i>	50	15	30	22	44	7	14
<i>Labrus bergylata</i>	54	8	14.8	27	50	19	35.18
<i>Mullus surmuletus</i>	50	20	40	40	80	3	6
<i>Trachurus mediterraneus</i>	56	11	19.64	16	28.57	8	14.28
<i>Galeorhinus galeus</i>	50	0	0	0	0	36	72
<i>Boops boops</i>	53	21	39.62	10	18.86	28	52.83
<i>Pagrus coeruleostictus</i>	50	3	6	25	50	0	0
<i>Spondylionoma cantharus</i>	52	30	57.69	20	38.46	0	0
<i>Liza ramada</i>	50	35	70	0	0	0	0
Total	465	143	30.75	160	34.40	101	21.72

مجلة اتحاد البيولوجيين العرب
القاهرة

